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ABSTRACT

The Melbourne Music Evaluation Kit (MEK) was designed to aid teachers of first-year secondary-school music classes to select appropriate curriculum materials related to the music backgrounds of class members, as indicated by scores on the kit. Tests included in the kit are criterion- referenced and are used as a diagnostic tool to measure students' pitch discrimination, discrimination in length of sounds, volume discrimination, tone color discrimination, pattern recognition, recognition of instruments and instrument groups, and knowledge of musical signs and symbols. In developing MEK, some of the behavioral objectives formulated by a panel of experts were used as a basis for constructing test items. Reliability and validity data are given, as well as a summary of user responses to a questionnaire. (The questionnaire used to evaluate MEK, item analysis data and the music teaching objectives for the Experimental Teaching Project are among the appendices). (MH)

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ACER AND UNIVERSITY OF MELBOURNE

MUSIC EVALUATION KIT

HANDBOOK AND REPORT

Jennifer Bryce

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY
J. P. Keeves

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

The Music Evaluation Kit was prepared with the collaboration of the Experimental Teaching Project, Faculty of Music, University of Melbourne under the direction of Max Cooke.

The Australian Council for Educational Research Limited
Hawthorn, Victoria 3122

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The *ACER and University of Melbourne Music Evaluation Kit* consists of seven parts:

Part I	*Pitch Discrimination*
Part II	*Discrimination in the Length of Sounds*
Part III	*Volume Discrimination*
Part IV	*Tone Colour Discrimination*
Part V	*Patterns Recognition*
Part VI	*Identification of Instruments and Instrumental Groups*
Part VII	*Knowledge of Musical Signs and Symbols*

Each part is presented on compact cassette tape, and each student should have a printed copy of the questions. Page originals of each part are provided for reproduction in schools. The recorded musical examples are played by a variety of instruments, and excerpts have been selected from a wide range of music.

Research and development expenses were met by a grant from the Education Research and Development Committee.

PREFACE

At the beginning of 1975 the Education Research and Development Committee (then the AACRDE) awarded a grant to Ms Jennifer Bryce, Research Officer, ACER, and Mr Max Cooke, Dean of the Faculty of Music, University of Melbourne, to undertake research in music measurement and evaluation. The ACER and University of Melbourne Music Evaluation Kit is the outcome of work carried out under this grant.

The kit is the first set of 'domain-referenced' or 'criterion-referenced' music tests to be published in Australia. Unlike normative tests which measure a student's performance in relation to a group of people (usually the age-group), these tests measure a student's performance in relation to the acquisition of skills in particular areas. The skills measured by this kit cover seven broad areas of music learning: Pitch Discrimination; Discrimination in the Length of Sounds; Volume Discrimination; Tone Colour Discrimination; Patterns Recognition; Identification of Instruments and Instrumental Groups; Knowledge of Musical Signs and Symbols. Students' scores may be used to plot individual and group profiles, giving the teacher information about individual strengths and weaknesses and also indicating general areas which have been mastered and general areas where help is needed. Therefore the kit is not a selection device or a grading instrument, but a teaching aid which may be used for diagnostic work.

The form in which the tests are being published reflects in part the experimental nature of the kit. It is the desire of the developers of these materials that they should be made available to teachers of both upper primary and lower secondary school music classes in the most flexible and economical form possible. Consequently, the materials have been prepared so that teachers may duplicate, without breach of copyright, the test booklets. It is hoped that in this form the kit will not be too expensive for schools to buy and that it will be widely used not only throughout Australia but also in other parts of the world.

Grateful acknowledgment must be made of the help received from many people particularly teachers in schools and members of the Experimental Teaching Project at the University of Melbourne Faculty of Music who have contributed towards the development of this kit.

J.P. Keeves
Director
ACER

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The following music educators developed follow-up classroom activities: Mary Coghlan, Primary Music Curriculum Committee, Victorian Education Department; Bruce Macrae, Nora Morrisroe, Special Services Division, Victorian Education Department; Max Cooke, Nancy Kirsner, Faculty of Music, University of Melbourne; Jill Ferris, Essex Heights Primary School; Noela Hogg, Barry Purcell, State College of Victoria, Burwood; Cristina Macrae, La Trobe University; Rosalind McMillan, Presbyterian Ladies College, Melbourne; Barbara van Ernst, State College of Victoria, Toorak.

For assistance with the research report, Jennifer Bryce expresses appreciation to John Foyster who designed computer programs for item analysis and helped with the writing of the report, to Bronwyn Hay for editing the report, to Judith Clark for typing the report, and to Judy McCombe and Noela Ryan for artwork in the report.

For use of written music we thank George Dreyfus, and Allans Music, Australia, for the excerpt played from 'Sebastian the Fox'.

For recorded music excerpts we acknowledge the permission of the following:

Angus and Robertson (Sydney) for John Symons: *Living Sound* ARE 001;

Australian Record Co. for Dave Brubeck Quartet: 'Castilian Drums' from *Countdown Time in Outer Space* CBS KLL1727, and '01' Man River' from *Gone With the Wind* CBS KLP823, J.P. Sousa: 'Stars and Strips for Ever' from *I Love a Parade* Columbia KLP 515, R. Strauss: 'Also Sprach Zarathustra' from *2001-Space Odyssey* Columbia SBR 235287;

EMI Records for Malcolm Arnold: 'Duke of Cambridge' March, from *Nulli Secundus*, The Band of the Royal Military School of Music, Kneller Hall, HMV OCLP 1730;

Peter Mann, Discurio-Fine Music for W. Mozart: *Chamber Music for Wind Instruments* Supraphon 1 11 1081-2, and K. Stockhausen: *Zyklus fur einen Schlagzeuger;*

Mushroom Records for Skyhooks: 'Is this America' from *Straight in a Gay Gay World* L-35, 982 SMX 49563;

Phonogram Recordings for L. van Beethoven: *Wellington's Victory* Philips Electrical GL 590, and *Egmont Overture* Deutsche Grammophon Gesellschaft 2535135, G. Gabrieli: 'Canzon Noni Toni' from *Gabrieli* Mercury MG 50245, Howard Hanson: *The Composer and His Orchestra* Mercury MG 50175, Witold Lutoslawski: *String Quartet* Deutsche Grammophon Gesellschaft 137001, T. Takemitsu: *Eucalypts II* Deutsche Grammophon Gesellschaft 253047;

Record Society (Australia) for B. Bartok: *Divertimento for Strings* 2-6002, and F. Delius: *Sleigh Ride* 83-6083;

Sound and Film Enterprises of Australia for 'Brass Band Boogie' and 'The Victor's Return' from Footscray-Yarraville Band: *Victor's Return.*

Those taking part in special live recordings were:

Announcers:	Jennifer Bryce and John Symons
Singers:	Roland Cropley, Barbara Johnson, Ursula Pytallek
Instrumentalists:	
keyboard	Jennifer Bryce, Laurie Davis, John Symons
flute	Virginia Tope
clarinet	Julie Seal
recorder	Ursula Pytallek
oboe	Jennifer Bryce
bassoon	Garry Bradley
French horn and saxophone	Barbara Livett
trumpet	Mervyn Collins
trombone	Ian King
violin and classical guitar	Lindsay Knight
'cello	Joy Fletcher
banjo	John Brodie
electric guitar	Jack Gay
percussion	Paul Campbell, Don Lees

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NEED FOR A TEST AT THE BEGINNING OF SECONDARY SCHOOL MUSIC EDUCATION

Whenever a teacher is faced with a class or group of music students, he is usually confronted with students possessing a wide range of interests and abilities. In addressing the question of students' musical ability, Bentley has described this problem:

> One child will reveal weaknesses in some aspects of music education, and of course we try to help him to overcome these; another will reveal exceptional strengths and enthusiasms, and to develop these he should be given all possible assistance; and there will be a whole continuum of varying abilities and attitudes between these extremes. Dealing with this range is one of the main problems of teaching music in classes or groups of children. (Bentley, 1975:17)

And Sarah, referring to secondary music education in Australia, has written:

> Music education as a part of the secondary school curriculum is at present a confused and divided subject. Among music educators there exists little consensus over what should be taught, the skills and techniques the pupil needs to learn or even the most effective form in which the subject should be presented in the secondary school. (Sarah, 1978:7)

This state of confusion may result from a lack of uniformity in philosophies and objectives of music education in Australia. The recent report on *Education and the Arts* (Australia. Schools Commission and Australia Council, 1977) suggests there is a need to rationalize teaching in fields such as music so that the importance of artistic development is not dismissed in the light of career-oriented subjects.

In an endeavour to alleviate these problems, the ACER and University of Melbourne Music Evaluation Kit (MEK) has been designed as an aid for the teacher of first-year secondary-school music (Year 7 in New South Wales, Victoria, Tasmania, Western Australia, Northern Territory, and the ACT, and Year 8 in Queensland and South Australia). At the secondary school entrance level, teachers are faced with students who have a variety of backgrounds stemming not only from natural individual differences, but from the fact that students will have come from a variety of primary schools, where music programs will have ranged from no music at all to programs involving activities such as creating music and playing instruments. The simplest solution to this variation in ability, both natural and developed, is to design a music curriculum to meet the needs of the 'lowest common denominator'; and this approach assumes that the students have studied no music at all.

A number of interesting and imaginative introductions to music concepts and skills have been developed but these approaches have not been extended far beyond the level of introduction.

Given that there is usually only one music period per week, the teacher may have valid reasons for not extending students' musical experiences beyond a very elementary level. But such an approach may be denying the existence of stimulating and successful primary school music programs, quite apart from the fact that Year 7 students have had 11 or 12 years' exposure to music of various kinds.

The MEK enables the teacher to prepare a profile of students' strengths and weaknesses in seven areas of music which were isolated after consultation with a sample of Victorian classroom music teachers. The teacher can use this information to help in deciding on appropriate content for the music curriculum. For example, it is generally assumed that pitch discrimination is basic to playing and listening to all forms of music. If some students are unable to use the concepts of 'high' and 'low' in relation to pitch, they should be given special help in this area. However, those members of a class who do understand these concepts should not be expected to take part in elementary activities, but should work at a level that will extend and interest them. In section 4 of this handbook some classroom activities related to scores on the MEK will be discussed. The MEK therefore assists the teacher to develop a curriculum based on a group's musical skills and knowledge rather than on the assumption that students have no background upon which to build.

NORM-REFERENCED TESTS FOR SELECTION PURPOSES

Many music tests have already been published; and the MEK is not intended to replace these tests.* In general terms, the MEK has been designed to guide the teacher of first-year secondary-school music classes in the choice of appropriate curriculum materials related to the music backgrounds of members of each class, as indicated by scores on the kit. The MEK is a criterion-referenced group of tests. The majority of existing published tests are norm-referenced. (A detailed explanation of these terms will be given in the following section of this handbook.) An important distinction is that norm-referenced tests are designed to spread the scores of a group so that individual differences are emphasized, while a criterion-referenced test is not intended to give a wide variety of scores. Thus a norm-referenced test is designed to assist in the ranking of students, and in determining a 'cut-off' point if the test has been given in order to select students for a particular purpose. By contrast, a criterion-referenced test provides information concerning whether or not students have mastered particular skills, or understood particular concepts.

There are occasions when ranking and selection of students is necessary, even at the beginning of secondary school; for example, if students are to be selected for attending a special music school, or if there are only limited resources available for instrumental tuition, and a large number of interested students. The tests designed by Bentley (1966b) or Gordon (1965) are the most suitable for such purposes, but teachers are advised to consult one of the comprehensive references mentioned below.

Most of these tests require careful introduction in the usual Year 7 classroom. For example Bentley (1966b) and Wing (1960), who announce their own tests, sound rather like kindly grandfathers. This may create an atmosphere that is not conducive to firm discipline in a class of lively twelve-year-old students. There may be some problems with American pronunciation in the Colwell (1968) tests, and in the Seashore (1960) measures children are told to get ready for the 'timber' (timbre) test. (Unless an explanation is given, there may be some misunderstanding.)

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* A reader requiring a comprehensive list of published music tests is referred to Colwell (1970), Gordon (1971), Horner (1965), or Lehman (1968).

Apart from the distinction between criterion-referenced and norm-referenced tests, some norm-referenced tests are measures of achievement, while others claim to measure aptitude or ability. As Bridges (1978) points out, all tests - including aptitude tests - measure some degree of achievement. The term 'ability' has been used by some test writers to overcome the fact that it is unlikely that a test measures pure aptitude.

The nature of musical abilities

Seashore is regarded as the pioneer of musical ability measurement. Test writers are indebted to his analysis of the 'musical mind' (Seashore, 1919) in which he delineated those aspects of talent he believed to be essential to music. He originally isolated 30 areas, and produced normative data for 27 of them. These areas ranged through a Sense of Pitch, Motor Imagery, Precision of Movement, and Tonal Memory, to Voice Control and Register of Voice. When Seashore revised his test battery in 1938, he concentrated on the sub-tests for Pitch, Loudness, Time, Timbre, Rhythm, and Tonal Memory, in the area he defined as 'musical sensitivity'. This area, as defined, forms the basis for a number of ability tests used today. For example the Bentley measures (1966b) have sub-tests called Pitch, Tunes, Chords, and Rhythms. Some test writers have included sub-tests which require value judgments of an aesthetic nature: notably Gordon (1965) and Wing (1960). This has caused some criticism of their test validity (Bridges, 1978).

It is most likely that teachers at the beginning of secondary-school music who are interested in using norm-referenced tests will want to use them for the selection of students for instrumental tuition. It is therefore useful to consider some tests that have been used for this purpose. Wing (1971) bemoans the waste of potential talent when some students with 'above average' ability on his standardized tests (Wing, 1960) do not learn a musical instrument. In relation to this, he is prepared to claim that it is wasteful of music teachers' time to spend it on the 'below average' group, who are likely to give up their studies. He supports these claims by a study of 333 boys aged 14 to 16 who were divided into three groups according to their results on the Wing tests. Group One was equivalent to the top 30 per cent of results, Group Two to the middle 40 per cent, and Group Three to the bottom 30 per cent. The percentages of boys who had started learning an instrument, but who had subsequently given up playing were as follows: Group One, 2 per cent had given up; Group Two, 27 per cent had given up; Group Three, 40 per cent had given up. Thus the lowest ability group, according to the test scores, had the highest percentage of drop-out students. Yet 60 per cent of this lowest ability group were apparently still continuing to play their instruments at the time of the study. It therefore seems rather harsh to claim that teachers are 'wasting their time' with this group of students. Certainly, if stringent selection procedures are necessary, Wing's results indicate that the 'above average' ability group appears to be least likely to give up instrumental studies. Wing himself cautions that test results cannot guarantee success, as qualities such as 'temperament' and 'character', which are not measured by the tests, are necessary prerequisites for successful instrumental study.

A study by Froseth (1971) reports the use of the Music Aptitude Profile (Gordon, 1965) in the beginning instruction of instrumental music. The children involved in the study were in grades 5 and 6. The students were classified into four musical ability groups on the basis of Music Aptitude Profile Scores. They were then randomly divided into an experimental and a control group. All students then started to learn a musical instrument. The teachers of the experimental group were given students' test scores, but those of the control group were not given their students' scores. Results showed that achievement of all students at each of the four ability levels of the experimental group was higher than the achievement at the corresponding levels of the control group. It is interesting that the lowest ability level in the experimental group achieved better than its counterpart in the control group, as one might expect instrumental teachers to have a negative approach towards students they are told have gained low scores on a music aptitude test. This factor suggests that the results may have been used in a similar way to those of a criterion-referenced test (although the Music Aptitude Profile is norm-referenced). Unfortunately the report gives no indication of how teachers used the results.

Bentley (1975) states that teachers who have used the Measures of Musical Abilities (Bentley, 1966b) for selection for instrumental tuition have reported that students in the highest scoring groups (the top 30 per cent for their age) tend to continue to play their instruments and to make progress, but that students in the lower scoring groups tend to make relatively slow progress. The following guarded advice from Bentley (1975) appears to summarize the factors involved in using published tests for selection for instrumental tuition:

> It may be maintained *with due caution*, that children who score well in the 'Measures' are likely to make more progress, and thus achieve greater satisfaction, in special instrumental tuition and playing than children who score badly. ... children with little ability may quickly become discouraged in trying to play an instrument requiring greater than normal skills; and to put them into a situation where they are likely, on the available evidence, to meet with comparative or even total failure is to do them a disservice ... There is no *guarantee* that a child with a high score will ever wish to take part in instrumental work. On the other hand a child with a lower test score, but keen, determined and with strong parental support, should not be excluded solely on the grounds of his test score if a place can be found for him. (Bentley, 1975:98-99)

It is therefore extremely unwise to use musical ability tests as the sole criterion for selecting students for special music education or for instrumental tuition, although the tests probably do form a valuable component of the selection process. The work of Rainbow (1965) and Shuter (1968) suggests that it is possible, though by no means certain, that information about a student's home background may be relevant to the process. As Bentley mentions, the student's (as distinct from the parent's) motivation is an important consideration.

In instances where students already play musical instruments, some objective measure of musical performance is needed. To date, attempts have been made, for example, by Watkins-Farnum (Lehman, 1968) and a rating scale for wind instruments is described in Whybrew (1971). The writer considers neither of these approaches to be satisfactory because there is no attempt to measure musical qualities such as sensitivity or beauty of tone. With these measures the performance is fragmented into categories rather than considered as a whole. It has been suggested elsewhere (Bryce, 1977c) that the possibility of 'impression-marking' a musical performance should be investigated. This method would enable the performance to be assessed as a whole, and norms could be established.

Teachers may well find the need to use norm-referenced tests as a part of their teaching program. Tests described in this section should be considered. The MEK will provide interesting information to aid decision-making, but it should not be used as the sole criterion for selection.

CRITERION-REFERENCED TESTS AND THEIR USES

The MEK could be described as diagnostic, domain-referenced, or criterion-referenced. The description 'diagnostic' is inappropriate because it has specific associations with psychological testing. The kit will not give a sufficiently fine measure of a student's learning problem to be classified in this way. 'Domain-referenced' could provide an appropriate description of the kit, as the distinction between 'domain-referenced' and 'criterion-referenced' is a fine one. It is doubtful, however, whether the item sampling used in the preparation of the MEK stands up to the requirements for domain-referenced test development as outlined by Hively (1974). It is, however, appropriate to use the term 'criterion-referenced' which, apart from being an accurate description of the test type, is the more commonly used term in test literature.

Glaser (1971:41) gives a comprehensive definition of a criterion-referenced test:

> A criterion-referenced test is one that is deliberately constructed to yield measurements that are directly interpretable in terms of specified performance standards. Performance standards are generally specified by defining a class or domain of tasks that should be performed by the individual. Measurements are taken on representative samples of tasks drawn from the domain and such measurements are referenced directly to this domain for each individual measured.

The domains of tasks covered by the MEK are defined by the objectives of the seven areas of the kit: Pitch Discrimination, Discrimination in the Length of Sounds, Volume Discrimination, Tone Colour Discrimination, Patterns Recognition, Identification of Instruments and Instrumental Groups, and Knowledge of Musical Signs and Symbols. The content of the test is therefore limited to seven clearly defined domains. The test does not purport to measure musical concepts and skills outside these areas, although it may do so incidentally. The questions, or items, for each domain do not cover all the possible questions that could be included in the domain. For example, the items in the pitch discrimination domain are a sample from the domain of possible pitch discrimination tasks. We believe that a student's score on a particular test, such as the Pitch Discrimination test, indicates how the student would score on a test based on the complete domain of tasks if it were feasible to present him with all of those tasks. In some fields, such as mathematics, it is possible to specify all of the tasks belonging to a particular domain. For example, the domain of addition of single digit numbers could be completely specified. The domains of the MEK cannot be so clearly specified. It is doubtful that any realistic music domains could be specified in this way. Even if one were for example to narrow the pitch discrimination domain to the discrimination of all rising perfect fifths that can be heard by 97 per cent of the population, one would have a fairly pointless and extremely arduous task to fulfil. The aim of the MEK is more general than this; we want to find out whether students have understood basic skills and concepts involved in pitch discrimination, as outlined by the objectives discussed in section 5.

Returning to Glaser's definition, it is worth considering ways in which teachers might set performance standards, although this will be considered at greater length in section 4. Decisions about performance standards on criterion-referenced tests such as the MEK are best made by the classroom teacher. There is no magic number to indicate that a student has unequivocally mastered a domain of tasks. Ideally a 100 per cent score (20 on the MEK) should suggest that a student has mastered the particular area being tested. Whether or not this indicates that he has mastered the domain depends upon the validity of the test, (this will be discussed in greater detail in section 6). It is also likely that students with high scores (such as 19 and 18 on the MEK) could be said to have mastered the domain, as it is possible that one or two points were lost through temporary inattention or carelessness rather than lack of understanding. Therefore the teacher may decide, for example, that students who score 17 and above on the Pitch Discrimination test can be said to have mastered the particular domain measured by the test, that students scoring between 12 and 16 require some reinforcement in the pitch discrimination area prior to re-testing, and that students scoring below 12 may require more extensive testing of basic skills and concepts in the pitch discrimination area and extensive help with the skills and concepts that have not been understood. It should be stressed that this is not a prescription, but merely an example of a chain of decisions which a teacher may make. The teacher may feel it appropriate to set different performance levels for each part of the kit, basing his judgments on the overall class performance and what he feels to be appropriate for the particular class. The ultimate goal would be to have each member of the class achieve the optimum performance level - in the pitch discrimination example given above, this would be a score of 17 or more.

Some writers define criterion-referenced tests by outlining ways in which they differ from norm-referenced tests (discussed in section 2). Hambleton and Novick (1973) suggest that one of the main differences between norm-referenced and criterion-referenced tests can be seen in terms of the kinds of decisions they are specifically designed to facilitate:

> Norm-referenced measurement is particularly useful in situations where one is interested in 'fixed quota' selection or ranking of individuals on some ability continuum. Criterion-referenced measurement involves ... a 'quota free' selection problem. That is, there is no quota on the number of individuals who can exceed the cut-off scores or threshold on a criterion-referenced test. (Hambleton and Novick, 1973:162-3)

It seems misleading to mention a 'selection problem' in relation to criterion-referenced testing. But the quotation emphasizes the point that in criterion-referenced testing we would be happy if all students scored 100 per cent correct on the test, whereas with norm-referenced testing we want to rank students and therefore a spread of scores is desirable. If all candidates scored 100 per cent correct on a norm-referenced test, that test would be of little use. To look at this distinction in terms of Glaser (1971), the user of a norm-referenced tests wants to know that Johnny can do more than Suzy. The question of what Johnny can or cannot do is left unanswered. The user of a criterion-referenced test wants to know what Johnny can do.

Hively (1974) discussing domain-referenced testing refers to the potentially conservative effect such testing could have on learning.

> Since the development of a comprehensive domain-referenced testing system is time-consuming, it is likely to be focused on a very small part of the school curriculum. If this likelihood is coupled with pressures for performance-based evaluation and accountability, the overall effect may be to drive schools toward very conservative programs. We need to work hard to find ways to encourage flexibility and individual initiative in generating domains and in tracking performance in them toward a variety of individual goals. (Hively, 1974:144)

Some of the problems Hively foresees may be particularly pertinent to the tightly sampled nature of domain-referenced tests. However, in terms of the MEK, it must be stressed that the test measures only some aspects of music. A teacher may wish to design measures applicable to other domains of music education, but some areas may be best left unmeasured. The MEK has been designed as a guide for the classroom teacher. The test authors do not advocate a music program which consists solely of criterion-referenced tests and reinforcement tasks.

INSTRUCTIONS FOR ADMINISTERING AND SCORING THE ACER AND UNIVERSITY OF MELBOURNE MUSIC EVALUATION KIT

General

As each part of the MEK requires approximately 15 minutes of intense concentration, it is strongly recommended that only one part of the kit is given in any one music lesson. The MEK has been designed so that it can be given to a class of approximately 35 students, but the teacher must ensure that sound reproduction equipment is of a high enough standard to allow every student in the room to hear every sound clearly. In particular, teachers should check that the softest sounds in *Part III, Volume Discrimination* can be heard, that the different timbre of instruments in *Part IV, Tone Colour Discrimination* are discernible, and that production quality is good enough to allow students to identify the different instruments used in *Part VI, Identification of Instruments and Instrumental Groups*.

Most portable battery-operated cassette recorders will not reproduce sounds of the required quality. A language laboratory system is ideal for administering the kit, but most classroom mains-powered equipment should be adequate.

Printed questions are provided on masters to be reproduced by each school that purchases the kit. Care should be taken to ensure high quality reproduction. Make sure that copies are given to students in the correct order. There is no extra time allowed between taped questions for shuffling papers.

The printed words correspond with the words on the cassette tape, and a timed pause is allowed on the tape between questions to allow students to answer the questions. The tape recorder should not be stopped during the testing session, except perhaps during the practice questions at the beginning of each part of the kit. If a large percentage of the class appears to be puzzled by a practice question after the explanation and answer have been given, the teacher may wish to rewind the tape and repeat the practice question. However, this should be done only once for any one practice question: some students will have difficulty with some questions because they have not yet acquired the necessary skills or knowledge. Do not rewind the tape for questions once the practice section has been completed.

Steps in administration

1 Before distributing materials (preferably before the class enters the room) check the volume level of the tape recorder to ensure that it will be heard easily by all students. It would be a wise precaution to stand at the rear of the room with the recorder playing to establish non-distorting optimum loads.

2 Tell the class that the ACER and University of Melbourne Music Evaluation Kit is being given to find out what musical skills and knowledge they have so that courses may be planned to suit them. If it is the case, point out that the students come from a number of different schools so they probably have different music education backgrounds: therefore some students will find some questions easy and other students will find them difficult because they have not yet learned those skills. Reassure students that they must not worry if they cannot do some parts of the kit - their scores are to help the teacher to work out what to teach them. Suggest that if students have no idea of the answer to a question they should leave out that question. Ask the students to try to answer the questions as best they can.

3 Distribute the printed material and ask students to fill in clearly the details of name and year (grade).

4 Tell the students that all instructions for answering questions will be given on the tape recorder. Emphasize that once the tape recorder is turned on they must be very quiet so that they do not miss any instructions, because the tape recorder will not repeat anything missed by talking, or lack of concentration.

5 Tell the students to listen very carefully, then turn on the tape recorder.

6 During the testing period do not help students answer questions or explain terms to them. If necessary reassure students that it does not matter if they leave out a question. Problems can be explained when the part has finished.

7 Collect papers as soon as the part finishes. (There is an announcement on the tape to indicate when a part ends.)

Teachers should feel free to modify these instructions according to local circumstances.

The working of each part is intended to be a learning experience. When a part is finished, it is appropriate to answer any questions students may have about material in that part. For example: What is a bassoon? What are slur and staccato markings?

Unless there is some good reason for doing otherwise, we recommend that the ACER and University of Melbourne Music Evaluation Kit be given in the order in which it is presented - starting with Part I and finishing with Part VII. Students who have had little or no music experience may become anxious if the first part presented requires specialized knowledge which they do not have. Part I has five practice questions and gradually familiarizes students with the test procedure.

Scoring the MEK

Award one mark for each right answer. As there are 20 questions in each part of the kit, the highest possible score for any one part is 20. Do not award half marks; an answer is either right or wrong. If more than one box is ticked for a question, mark that question wrong, even if one of the boxes ticked is the correct answer.

We think it would not be very useful, and certainly contrary to the underlying philosophy of the test constructors, if a student's scores on each part of the kit were to be totalled. A total score on the kit has little meaning. We recommend that a student's profile is plotted as suggested on page 13 of this handbook.

The correct answers for each part may be found in the answer booklet which accompanies the kit.

5

USES OF THE ACER AND UNIVERSITY OF MELBOURNE MUSIC EVALUATION KIT

The MEK is intended to aid the classroom music teacher in creating appropriate individual and group learning experiences. As it was designed for use at the very beginning of secondary school, each part is purported to have a direct relationship to the curriculum. For example, if the teacher finds that most students have high scores for *Part VII, Knowledge of Musical Signs and Symbols*, it can be assumed that the basic elements of music reading are understood. In such a case it is likely that a few students may need special help in this area, but the class as a whole does not need to be taught the meaning of the basic signs and symbols. Likewise, if most students have low scores on *Part IV, Tone Colour Discrimination*, they may lack training in careful listening to sounds.

Parts VI and VII measure acquired musical knowledge, whereas Parts I-V can be answered without specialized knowledge. So high scores on Parts I-V, and low scores on Parts VI and VII may suggest that a student has high musical potential but has not, at the time of testing, had the opportunity to acquire specialized knowledge.

The MEK is not intended for use as a selection or grading instrument. This matter is discussed in sections 2 and 3. Scores on some parts of the MEK may be of interest to instrumental teachers, particularly Part VII, which will indicate whether or not a student will need instruction in the basic elements of music reading.

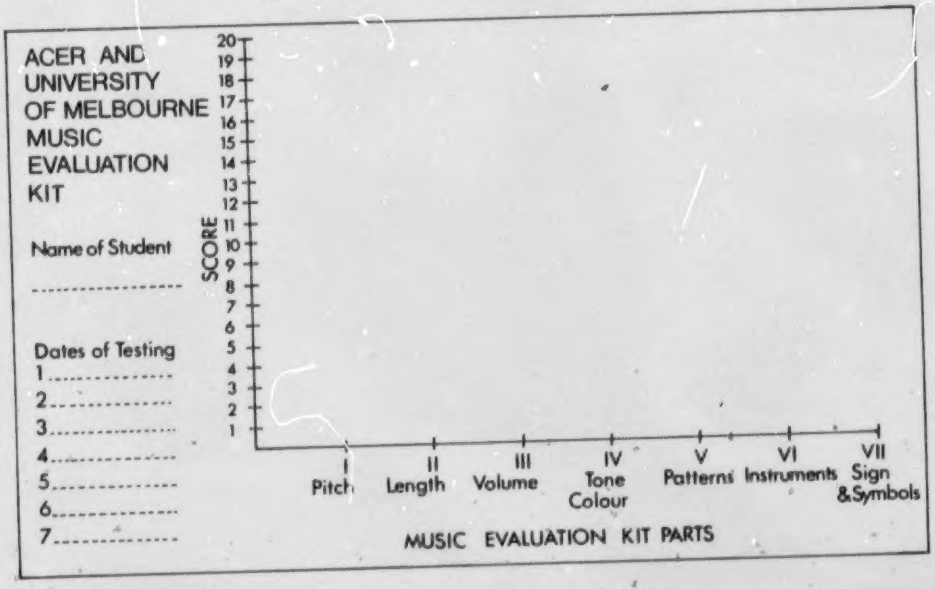
The sample record card (printed on page 14 at the correct size) is a standard filing card, 13 cm x 8 cm. The card may be photocopied for reproduction in schools.

Teachers may obtain a picture of individual students' scores by plotting a profile for each student as shown on page 14.

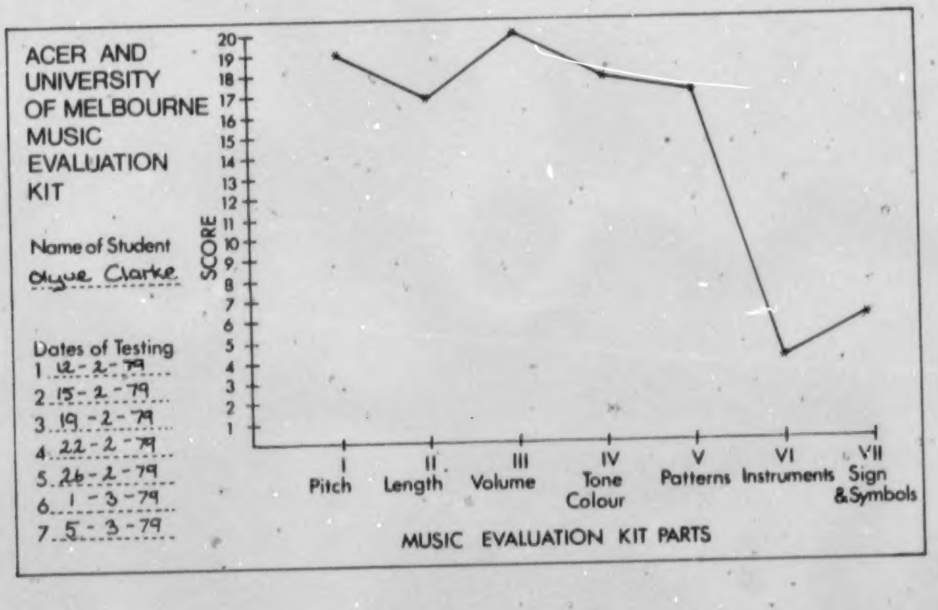
The sample record card is for a student who had high scores on Parts I-V but low scores on Parts VI and VII. The high scores on Parts I-V suggest that the student has high musical potential - a keen ear and an ability to retain musical phrases. The student appears to understand the concepts of Pitch, Length, and Volume as related to music but at the time of testing the student had not learned to recognize the sounds of musical instruments and had very little understanding of musical signs and symbols.

We suggest that the teacher should file student record cards according to known musical background (such as information from feeder schools, or any other student characteristics that the teacher considers useful). These groupings may highlight patterns which could be used to establish working groups for classroom activities.

Blank Record Card



Completed Record Card



Name of Student
Alyue Clarke

Dates of Testing
1 12-2-79
2 15-2-79
3 19-2-79
4 22-2-79
5 26-2-79
6 1-3-79
7 5-3-79

The graphs on pages 16 and 17 indicate how a class profile may be plotted to show performance on each part of the kit. Class profiles will give the teacher a picture of the class abilities in each domain of tasks measured by the kit. The graph on page 16 is a sample which may be used as a master for reproduction of further copies to use in schools. The graph on page 17 is a fictitious example for *Part VI, Identification of Instruments and Instrumental Groups,* showing a class where some students have learnt to recognize the sounds of musical instruments in their primary school classwork or elsewhere, whereas other students have not yet acquired this knowledge. The students have been grouped according to the primary schools they attended. Two primary schools - St Joseph's and Peanutville - appear to have given some emphasis to the identification of musical instruments.

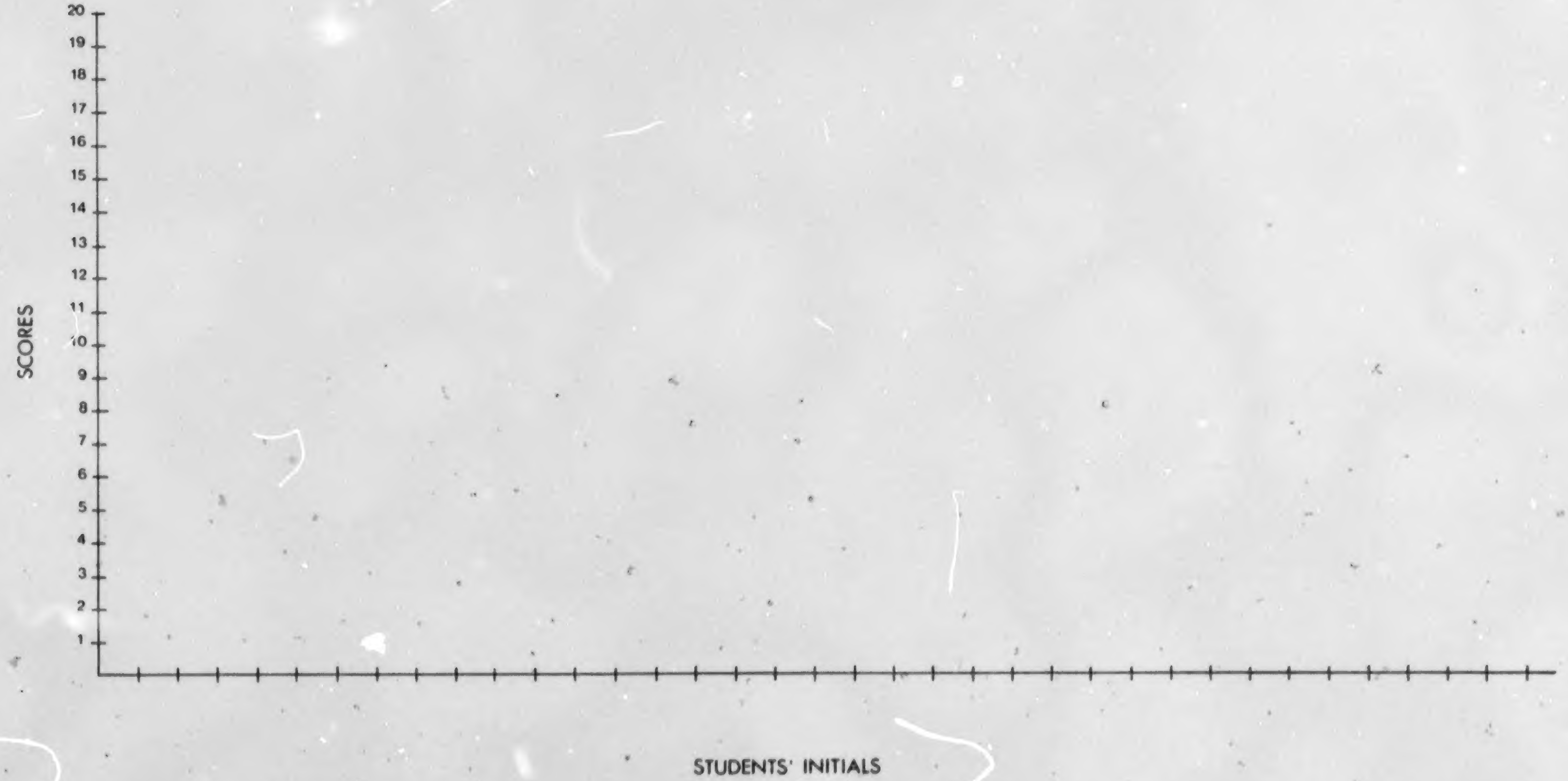
Readers will now be aware that, with criterion-referenced testing, the action taken after testing is of uppermost importance. A teacher who does not make use of students' scores on the MEK is wasting effort. The tests should certainly not be given just to fill in time, or to provide marks for students' report cards. As suggested in section 3, after testing a teacher may decide that students who have scored, say, 17 and above can be said to have mastered the particular domain of skills and that students who have scored, say, below 12 appear to have particular difficulties with that area of skills or knowledge. It would be wise to devise some further simple tests for the low-scoring group to try to isolate particular trouble spots. Ideally such tests should be given on a one-to-one basis. It is possible that very basic problems, such as deafness, may be discovered. The group of students who, in this case, have scored below 12 will need classroom activities to help them understand the particular skills or concepts in the domain of tasks measured by the part of the kit on which they have obtained low scores, whereas such activities will be unsuitable for those students whose scores indicate that they appear to have mastered the particular domain of tasks. Given the usual secondary-school classroom situation, it is probably most sensible to divide the class into three working groups on the basis of scores on a particular part of the kit. (The membership of each of these groups would probably alter for working on each of the different domains of tasks measured by the kit.) The group whose scores indicate mastery of the area could be given enrichment activities to extend skills or knowledge in the particular area. The group with low scores could, after further testing, be given activities to help understanding in

AUSTRALIAN COUNCIL FOR EDUCATIONAL RESEARCH AND UNIVERSITY OF MELBOURNE MUSIC EVALUATION KIT

Part of Kit: --

Date of Testing: ---

Class: ----------------------------



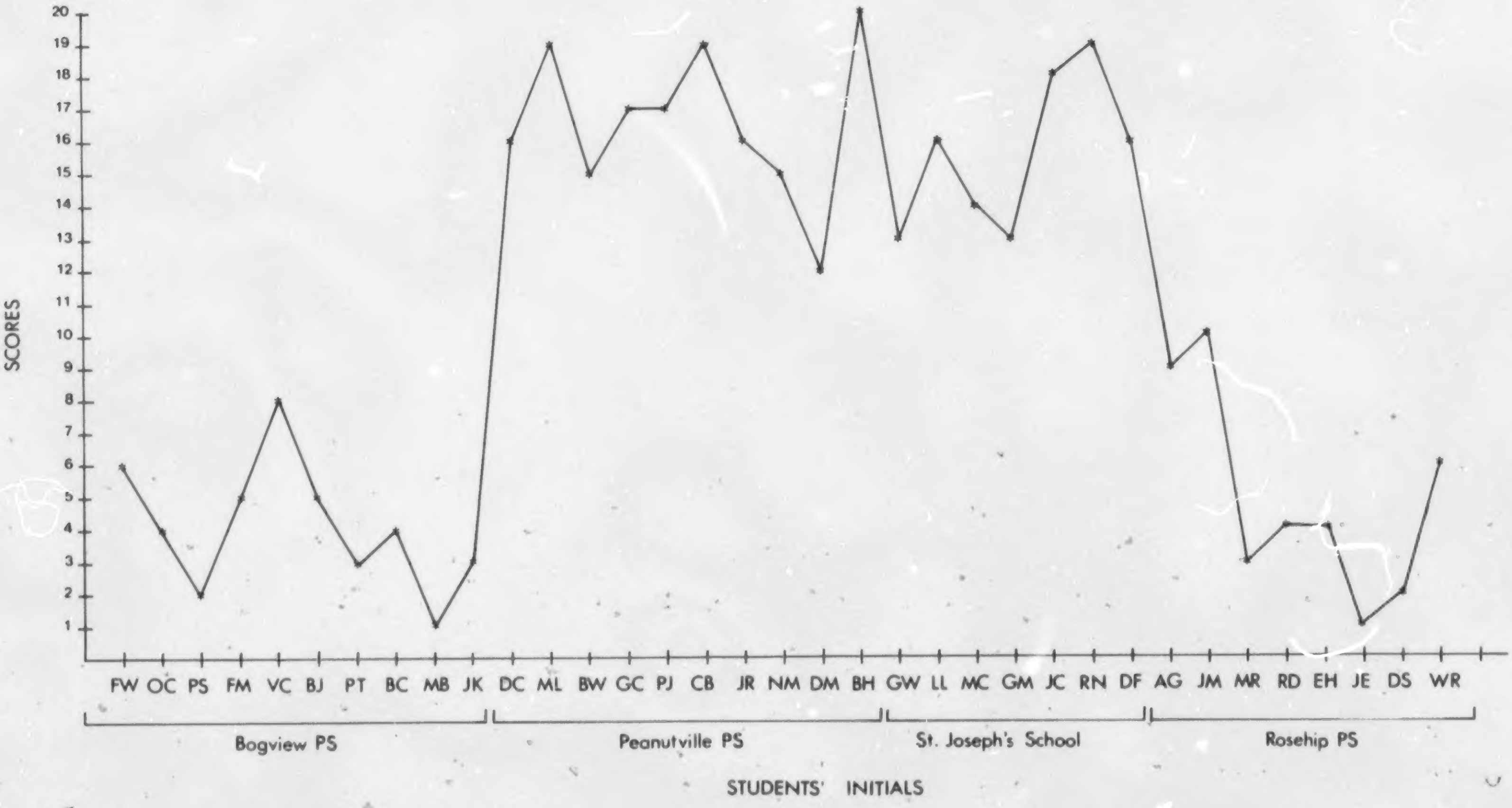
AUSTRALIAN COUNCIL FOR EDUCATIONAL RESEARCH AND UNIVERSITY OF MELBOURNE MUSIC EVALUATION KIT

Fictitious example of classroom profile

Part of Kit: Part VI - Identification of Instruments & Instrumental Groups.

Date of Testing: 26 - 2 - 79

Class: 7B



the particular area, and the group falling between these two could be given further reinforcement in the area. Therefore the class as a whole would be working in the area of, say, pitch discrimination, but at a number of different levels.

It may be desirable to retest at a later date those students whose scores did not indicate mastery of the particular domain, or the teacher may prefer to prepare his own test for this purpose. It is important to ensure that learning experiences are aimed at the mastery of the particular skills or concepts of the domain as specified by the objectives (see section 5) and that they are not simply helping students to develop an expertise in answering the test items. If the teacher plans to use the test again with the same group of students, it is best that correction is done out of class by the teacher. However, if the teacher does not plan to use the test again, it may be a worthwhile learning experience to correct the test in class, replaying test items and explaining answers where necessary.

One interesting use of the test in schools is to give a part of the MEK (say Part VI) and have it corrected in class by the students. A skilled teacher might replay the instrumental examples and use a number of the particular instruments to demonstrate how they work.

Teachers will notice that Part VII of the kit does not test whether students know the names of notes and other musical signs that can be tested without aural stimulus. It was decided that, as aural stimulus is not needed, it is best to leave it to the teacher to devise a paper-and-pencil test in this area. Some suggested items are given below.

1 If ♪ is the beat, which symbol means
'Hold for 4 beats'?

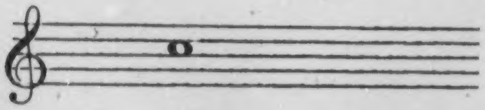
𝅝 ☐
𝅗𝅥 ☐
♩ ☐

2 If ♩ is the beat, which symbol means
'Rest for one beat'?

𝄾 ☐
𝄼 ☐
𝄽 ☐

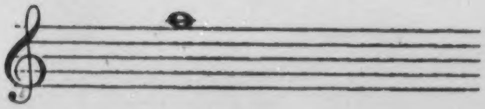
For questions 3-9 tick one box to show the name of each note.

3



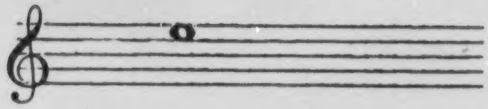
A ☐
B ☐
C ☐
D ☐

4



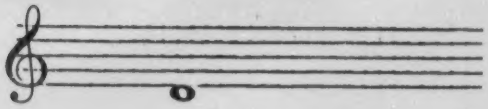
A ☐
B ☐
C ☐
D ☐

5



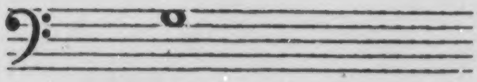
A ☐
B ☐
E ☐
F ☐

6



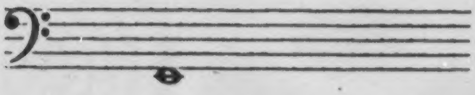
B ☐
D ☐
F ☐
G ☐

7



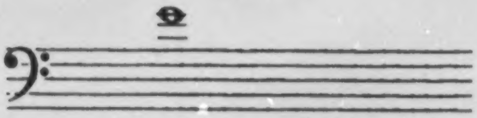
B ☐
D ☐
E ☐
G ☐

8



A ☐
C ☐
E ☐
G ☐

9



A ☐
C ☐
E ☐
G ☐

Several activities are suggested that could be used after giving the appropriate part of the MEK. The main purpose of these activities is to provide models for the teacher who should try to devise activities appropriate to the particular needs of the class. The activities are classified according to the part of the kit they are intended to follow, and according to the group of students for which they have been designed:

1 those students whose scores fall below a point set by the teacher, suggesting that they do not understand the particular concepts or skills measured by the part of the kit;

2 those students whose scores indicate that they have not yet mastered the particular area being measured and that, although they appear to have some understanding of the concepts or skills involved, further reinforcement is needed;

3 those students whose scores fall above a point, set by the teacher, which indicates mastery of the particular area; these students require enrichment, and extension of their understanding and knowledge of the area.

By mentioning the grouping of students there is a danger that teachers may see these categories as gradings. It must be remembered that criterion-referenced tests are not designed for grading purposes. The suggested groupings are a method of coping with different needs in a classroom situation. It is very likely that a student working in, say, group 1 for pitch discrimination may work in group 2 or 3 for other areas measured by the MEK. Further, the existence of such groups should be seen as temporary. The main aim is to have all students master the domains of tasks covered by the tests.

Suggested classroom activities

1 'Bottles'

Pitch Discrimination, group 1

Ask each student to bring a bottle to school. It can be any shape or size. Explore the sound possibilities of the collection of bottles - for example, the pitch can be varied by filling them with different quantities of water. Ask the students to order the bottles from lowest to highest. (The bottles could be used for other activities such as creating tunes.)

2 'Recognition, graphics, and replay'

Pitch Discrimination, group 1

(i) The teacher performs a short musical phrase which includes both large and small intervals.

(ii) Students sing the melody, using solfa if known, identifying big leaps up, big leaps down, small leaps up ... as appropriate.

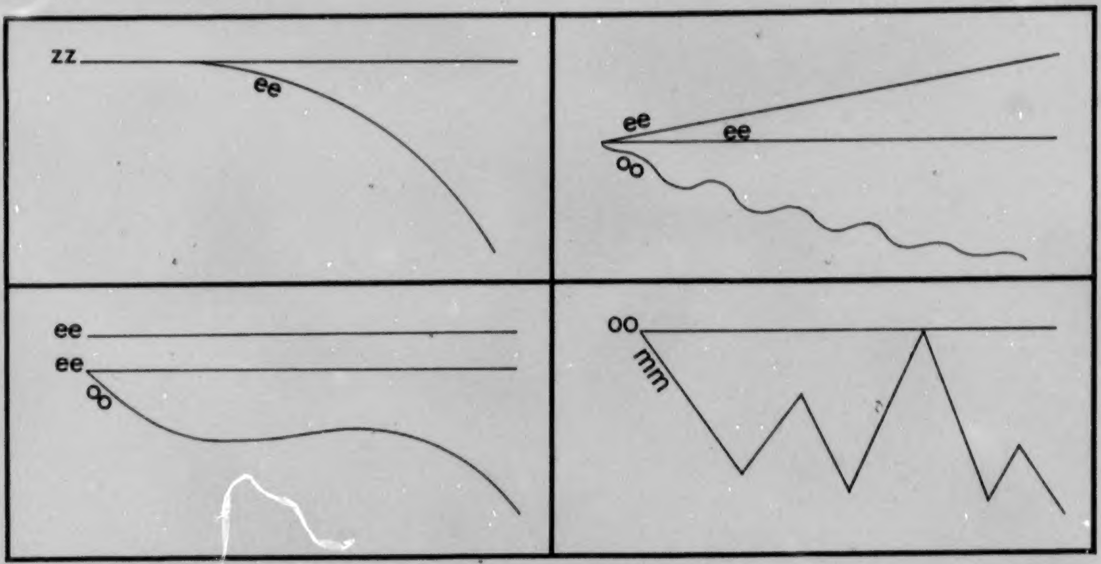
(iii) Notate the musical phrase - a simple form of graphic notation is probably most suitable.

(iv) Using a glockenspiel, or other suitable melodic instrument, students try to play the melodic phrase following the notation.

3 'Notating pitch changes'

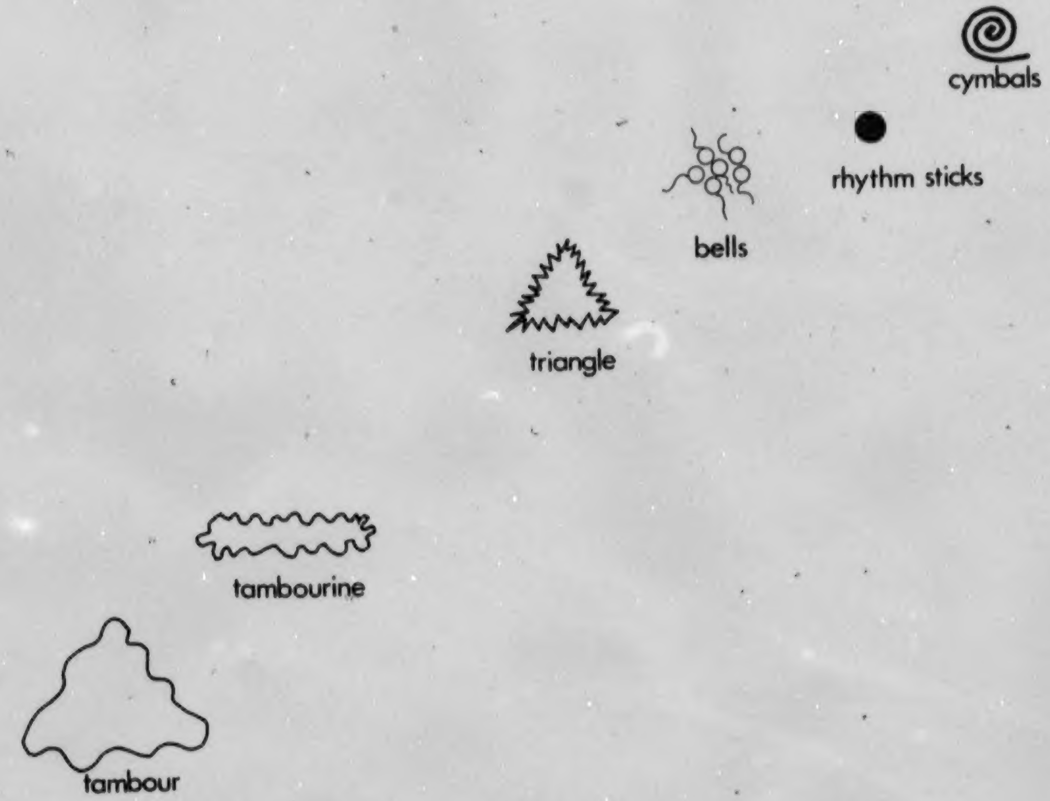
Pitch Discrimination, group 2

Ask students to experiment by making a variety of vocal sounds that stay at the same pitch, or change in pitch. The students should then try to notate these sounds. Below are four examples devised by senior students at a primary school. In the first example, both 'zz' and 'ee' start at the same pitch, then 'ee' gets gradually lower. Members of the class then perform the notated examples.



4 'Graphing the pitch of sounds'
Pitch Discrimination, group 3

Give students a collection of non-tuned percussion instruments. Ask them to listen carefully to the pitch of each instrument, and then to try to order them in pitch from lowest to highest. Students should then draw a graph representing the different pitch levels of the instruments. They will need to work out an appropriate symbol for each instrument. Try to show the relative distance from one pitch to the next as in the example below, where the pitch levels of the tambourine and triangle were considered to be further apart than those of the triangle and bells.



Graph designed by senior primary school students

5 'Moving to sounds'
Discrimination in the Length of Sounds, group 1

(i) Teacher (or student who can keep a good regular pulse) plays a regular tap on a drum or other suitable percussion instrument. Students walk in time with the tap.

(ii) At a pre-arranged signal (such as 'change', 'now', or a louder tap) the player taps twice as fast, for example changing from

♩ ♩ ♩ ♩ to ♫ ♫ ♫ ♫

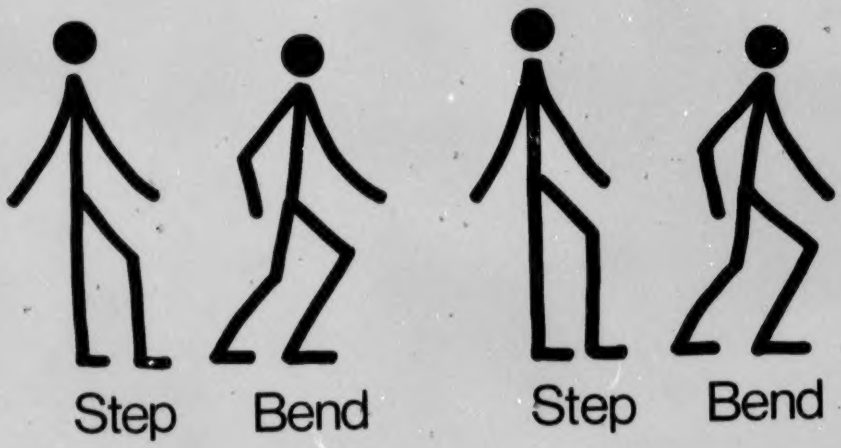
Students run in time with the tap.

(iii) Return to the original speed at a given signal.

This activity could be done first with the accompanying taps on the drum, then students could try to keep time without this aid. When this exercise has been achieved, introduce a further dimension.

(iv) From the original speed, play the taps twice as slow; for example changing from ♩ ♩ ♩ ♩ to 𝅗𝅥 𝅗𝅥

Students move by stepping and then slightly bending the knee on, in this case, the second crotchet beat: step bend, step bend.



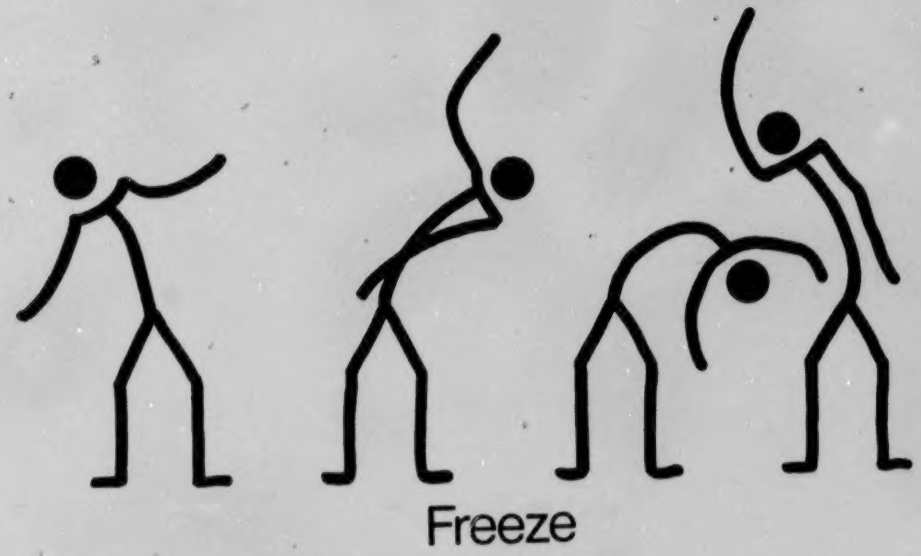
6 'Freeze'

Discrimination in the Length of Sounds, group 1

Teacher plays a sustained chord on the piano, counting beats to himself so that he will be able to repeat the chord as accurately as possible several times.

Students stand with their feet apart and move their arms and body weight for as long as the sound continues.

When the sound stops, they freeze.



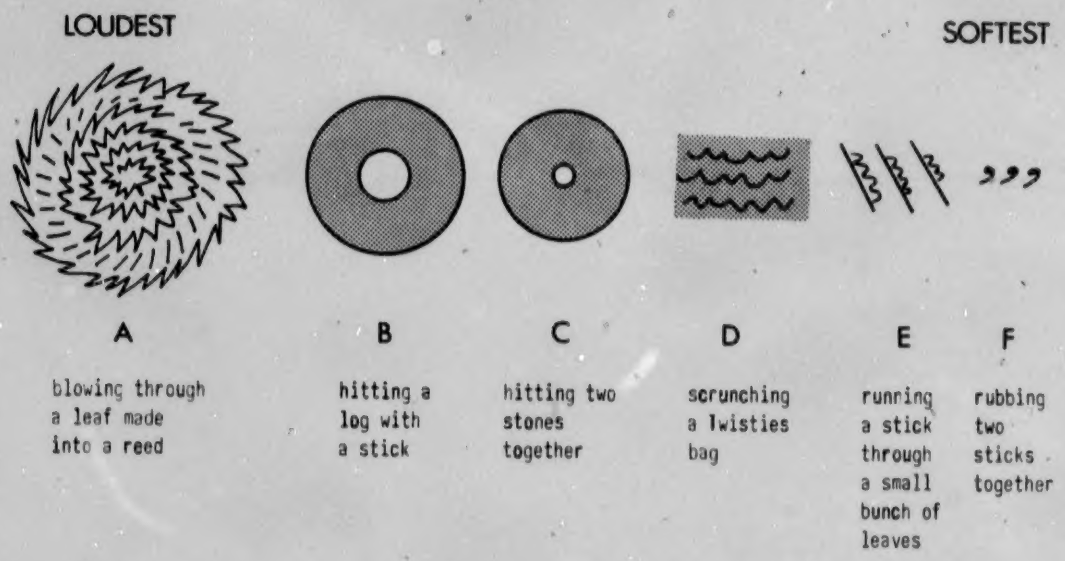
Then let the students try to repeat the same length of sound without the chord being played. (It's best to keep eyes closed to prevent copying!)

7 'Graphing the volume of sounds'

Volume Discrimination, group 3

This activity is similar to 4, 'Graphing the pitch of sounds' but it is concerned with volume discrimination.

Let students investigate a number of different sounds in the playground, listening carefully to their volume. If portable cassette players are available, students may like to record their selection of sounds. Try to order these sounds in volume from loudest to softest (barely audible). Then by describing the sound - 'swishy', 'vibrating' - work out symbols to represent the sounds. The graph below was devised by senior primary school students.


LOUDEST
SOFTEST
A
blowing through a leaf made into a reed
B
hitting a log with a stick
C
hitting two stones together
D
scrunching a Twisties bag
E
running a stick through a small bunch of leaves
F
rubbing two sticks together

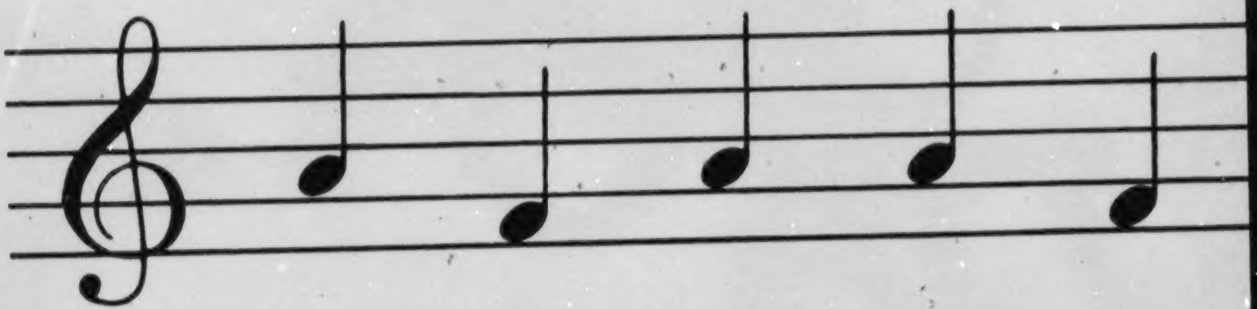
Playground Sounds - Loud to Soft

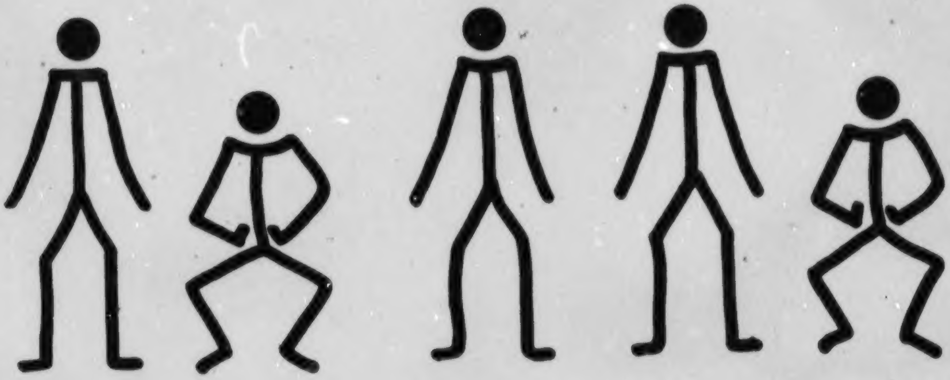
8 'Starting to read music'

Knowledge of Musical Signs and Symbols, group 1

The main aim is to give students a general picture of the notation of sound progression

(i) Establish the concept of notating high and low by getting students to be the notated sounds. For example:





(ii) Use instruments such as Anklung or chime bars, enabling each student to have her or his own note. The teacher points to a student and he plays his note. Play a number of simple melodies in this manner.

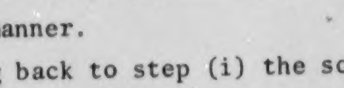
(iii) Referring back to step (i) the sounds (each student with his instrument) are notated. A melody is played with the teacher pointing to the notation.

(iv) Four students hide behind a screen (or hide so that they can be heard but not seen). They play their sounds in various orders while the rest of the group tries to notate them.

9 'Fish'

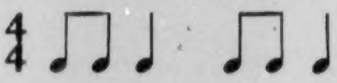
Knowledge of Musical Signs and Symbols, group 2

This activity is based on the card game called Fish. Instead of using an ordinary pack of cards, the teacher makes up a set of cards with rhythmic patterns notated on them like this:



The complexity of the patterns depends on the ability of the group involved. There should be pairs of identical cards (patterns).

The game starts with the teacher or an appointed student shuffling the cards and dealing at least three cards to each student (players need to have an odd number of cards - five, seven ...). Players then sort their cards into pairs. The aim is to be first out, by pairing all cards. It is best to have the players sitting in a circle. The undealt cards are placed in the centre of the circle. After sorting cards into pairs, players take it in turns to request cards to make up pairs with the rest of their cards. They request by saying, for example,

Do you have:  (they must accurately clap the rhythm).

Each request is made to a particular player. If the player to whom the request is made does not have the specified rhythmic pattern, the player whose turn it is must 'fish'; that is, take a card from the pile in the centre of the circle. The teacher can move around the circle to ensure that rhythmic patterns are being read correctly, and can intervene when necessary.

10 'Notating environmental sounds'
Knowledge of Musical Signs and Symbols, group 3

Collect interesting environmental sounds by recording them with a portable cassette recorder - for example, a newsboy's call, footsteps, building workers, a squeaking door. Try to notate these sounds as accurately as possible (using both free and conventional notation). Take care to represent the pitch accurately - it is useful to work with a keyboard instrument to check the pitch. Then try to play the notated sounds on classroom instruments. Make up pieces of music using both classroom instruments and environmental sounds.

In conjunction with this activity, listen to Olivier Messiaen's *Seven Haikai*, and look at Percy Grainger's attempts to notate folk songs exactly. Further examples can be found in Trevor Wishart: *Creativity and Environment*, London: Universal Editions, 1974.

It must be stressed that the ten activities given above should be used as models; they are just suggestions as to how a teacher might follow up scores on the MEK. Most of the activities involve performing and making sounds - tasks which it was impracticable to include in a multiple-choice objective classroom test. Once again it must be stressed that the kit covers only a small portion of the possible domains of musical tasks. Teachers should try to devise their own tests and activities covering other music teaching objectives.

METHOD OF DEVELOPING THE ACER AND UNIVERSITY OF MELBOURNE MUSIC EVALUATION KIT

The need for the promulgation of a clear philosophy and rationale for music education has been mentioned in section 1. Music educators are accountable to the education authorities and the community. In a climate in which career-oriented subjects and literacy and numeracy are favoured, it is imperative that music educators clearly define their reasons for teaching music in schools. Carefully specified objectives stemming from such a rationale would help to overcome the present lack of coherence between primary and secondary school music.

A series of music teaching objectives was developed with the co-operation of teachers taking part in the Experimental Teaching Project, University of Melbourne, directed by Max Cooke (see Appendix I). These objectives were intended to be relevant to all levels of music education and to both classroom and instrumental instruction. Although existing collections of music-teaching objectives provided useful models (Instructional Objectives Exchange, n.d.; Colwell, 1970; National Assessment of Educational Progress, 1970; Thomas, 1970) they were found to be too specifically centred on a particular curriculum. In the present study, the intention was to write objectives that would be content-free, and that would allow flexibility of teaching strategies.

Before proceeding to a discussion of the objectives which resulted from this work, it is worth mentioning some of the problems faced and to alert the reader to the inevitable shortcomings of an attempt to define an art form. An overriding problem is the fact that words must be used to define an art form which itself surpasses the constraints of words. As Biggs (1971:171) points out, 'There is a danger that words used in classification may reduce to static terms an art mainly characterized by change, movement, and progression'. The words used to describe music are the same as those used to describe spatial or concrete arts. For example, the word 'structure' takes on a different shade of meaning when applied to music-an art form that proceeds through time.

It was not possible to use the usual categories of cognitive, affective, and psychomotor for the classification of music teaching objectives (Bloom, 1956; Krathwohl, 1964; Harrow, 1972) as not enough is known about musical processes to place them in a hierarchy. For example, Bloom (1956) in the Cognitive Domain taxonomy of objectives assumes a gradual development from concrete to abstract reasoning. However, very few musical activities are concrete, and a number of apparently simple musical processes involve abstract operations. A great deal more research into musical processes is needed before music objectives can be placed with confidence in a hierarchy.

The resulting music teaching objectives appear in Appendix II together with two explanatory diagrams: Relationship between the Aim, Goals, and Instructional Objectives, and Framework for Instructional Objectives of the Experimental Teaching Project. The instructional objectives are considered to be the means by which the broad aim and goals are achieved, whereas there is no explicit relationship between these three sections and the indirect outcomes which express a series of 'hopes'. The instructional objectives are not hierarchical, for reasons explained above. The categories of Skills, Knowledge and Understanding, and Appreciation should provide a useful framework, although they are seen to be artificial divisions and are therefore overlapping, as illustrated by 'Framework for Instructional Objectives of the Experimental Teaching Project'. It would be absurd to suggest that a teacher encourage the development of, for example, dextrous skills in isolation from listening skills or appreciation. It should be noted that the classification Appreciation is not intended to convey the meaning of the word as applied to 'musical appreciation courses'. Unfortunately a more satisfactory word could not be found.

The objectives have been written in behavioural terms so that they could be used as a basis for evaluation; they therefore attempt to specify observable behaviour. On this point, the warning of Lehman (1973:27) should be mentioned.

> Trivial learning behaviours are usually easiest to state operationally. The teacher must be careful not to overemphasize those objectives which are easiest to specify. Rather, he should seek ways to state behaviourally those objectives which are most important and which provide convincing evidence that his goals have been met.

Although the music teaching objectives extend beyond the trivial, they are by no means a 'fait accompli'. They serve to provide a domain of tasks which has proved a useful basis for the criterion-referenced tests of the Music Evaluation Kit, but it is likely that teachers will wish to make modifications to them. They may be a starting point towards the definition of a clear philosophy and rationale for music education, but such a project needs to be developed from a broader base so that it can be implemented with confidence of its appropriateness to all levels of music education.

The music-teaching objectives are content free so that they can provide a non-constricting framework for music programs at all levels. Two steps were necessary, however, in using these objectives as the basis for the formulation of criteria for the criterion-referenced tests. As the extent of the tests would be limited, it was necessary to determine which objectives were most applicable to the teaching of music at the beginning of secondary school. Once the appropriate objectives were isolated, there was a need for more detailed specification and the inclusion of content.

A panel of experts was formed, representing teachers from primary, high, technical, and independent schools, the Victorian Education Department Special Services Division, university music faculties, teachers colleges, and staff of the Australian Council for Educational Research. The panel isolated the following music teaching objectives as most applicable to the beginning of secondary-school music education:

Listening Skills

1.11 To recognize differences in pitch

1.12 To recognize differences in the length of sounds

1.14 To recognize differences in dynamics

1.16 To recognize differences in timbre and texture

Knowledge and Understanding

2.21 To understand the meaning of a written musical symbol

2.23 To translate a written musical symbol and hear the appropriate sound

2.34 To recognize the role of fragments as a part of a whole composition

2.35 To know the basic structures of musical composition

Appreciation

3.11 To want to make music

3.12 To want to listen to music

3.13 To want to create music

3.14 To show satisfaction/enjoyment in taking part in musical activities

It was initially thought that three tests could be written to cover the three areas of Listening Skills, Knowledge and Understanding, and Appreciation. The Appreciation section would be measured by a questionnaire rather than a test with right/wrong answers.

To support the judgments of the experts and to give more detailed specifications for the tests a sample of Victorian classroom music teachers who had classes at the Year 7 (first year secondary) level was interviewed. Appendix III is a questionnaire which was used as an interview schedule. Whenever possible teachers completed the questionnaire in the presence of a member of the ACER staff who was able to discuss the issues and expand and explain where necessary. In a few instances it was not possible to visit schools, and the questionnaire was sent with an explanatory letter and stamped envelope for return to ACER. Appendix IV gives a list of schools involved in these interviews. Teachers' opinions led us to omit a measurement of Appreciation and the testing of objectives 2.34 and 2.35, and to include the following objectives:

1.13 To recognize differences in rhythmic patterns

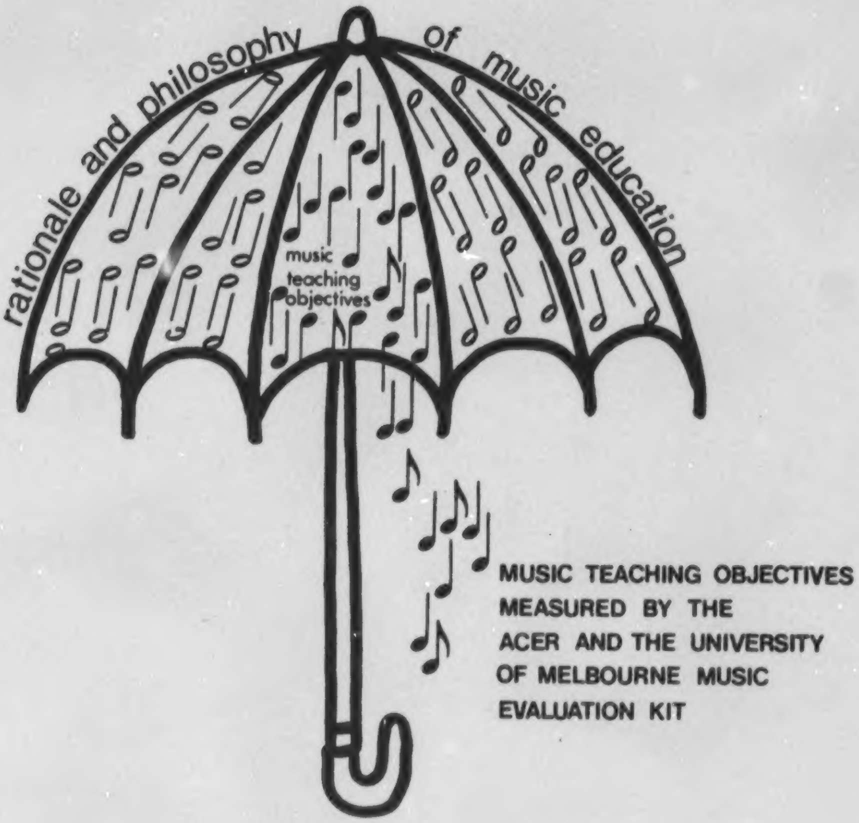
1.18 To remember a given musical theme/phrase

Teachers also requested that a new objective be included:

To identify the sounds of musical instruments.

This objective, which would fall under the classification Knowledge and Understanding is too content-prescriptive to be included in the original scheme of objectives: some teachers may not want to teach students to identify the sounds of conventional musical instruments. However, as this activity appears to be popular at the Year 7 level, it seemed appropriate to include it in the Music Evaluation Kit. Teachers who are not interested in this area need not follow-up students' scores on Part VI of the kit. The table indicates the relationship between the specified instructional objectives and parts of the MEK. Parts I to V of the kit do not assume musical knowledge, whereas Parts VI and VII measure specific areas of musical knowledge.

At this stage it is worth emphasizing that the seven parts of the kit cover only a very small proportion of the domain of tasks defined by the music teaching objectives outlined in Appendix II. They are not necessarily representative of the most important areas of music education, and it would be a detrimental and conservative step to focus the Year 7 music curriculum on these areas alone. The diagram and table on pages 33 and 34 illustrate


rationale and philosophy of music education
music teaching objectives
MUSIC TEACHING OBJECTIVES MEASURED BY THE ACER AND THE UNIVERSITY OF MELBOURNE MUSIC EVALUATION KIT

that the MEK is concerned with only a small portion of the music teaching objectives written for the Experimental Teaching Project which in turn by no means covers the complete domain of music education.

In order to generate test items it was necessary to formulate more detailed specifications from the instructional objectives for each test. These, together with the items measuring each objective, are outlined in the table on pages 35-38.

Once the content areas had been established, item writing commenced. It was agreed that all items would be multiple-choice with recorded stimulus material, as this seemed to be the most practical method of presentation in the classroom. Examples were selected from a wide range of music to keep the items interesting. For purposes of reliability (see section 6) it is necessary to have at least twenty items covering each domain to be tested. For example, if there were only three items measuring pitch discrimination and a student got two right and one wrong, the teacher could not be certain

Table 1 The Relationship between Music Teaching Objectives and the Parts of the ACER and University of Melbourne Music Evaluation Kit

Instructional objectives measured		Part of kit	
1.11	To recognize differences in pitch	I	Pitch Discrimination
1.12	To recognize differences in the length of sounds	II	Discrimination in the Length of Sounds
1.14	To recognize differences in dynamics	III	Volume Discrimination
1.16	To recognize differences in timbre and texture	IV	Tone Colour Discrimination
1.13	To recognize differences in rhythmic patterns	V	Patterns Recognition
1.11	To recognize differences in pitch		
1.18	To remember a given musical theme/phrase		
see text above	To identify musical instruments from their sounds	VI	Identification of Instruments and Instrumental Groups
1.16	To recognize differences in timbre and texture		
2.21	To understand the meaning of a written musical symbol	VII	Knowledge of Musical Signs and Symbols
2.23	To translate a written musical symbol and hear the appropriate sound		

as to whether the student could recognize differences in pitch; whereas, if in a twenty-item test the student scored only two items correctly, the teacher could be reasonably confident that the student was experiencing difficulty in the area of pitch discrimination. A twenty-item test concentrating on one particular area can be rather tedious, especially for an 11- or 12-year-old student. It was therefore desirable that the items be as varied and interesting as possible.

Draft test items were written and put into sample tests; this task included recording the musical stimulus material, sometimes rather crudely, as professional equipment was not available at this stage. These items were reviewed by panels of experts with representation similar to the panel that worked on specification of content, mentioned above. Items that survived this scrutiny were placed in experimental forms of the kit to be trial tested in schools. At this stage, musical examples were played by students of the Faculty of Music, University of Melbourne, and recording

Table 2 Relationship between Instructional Objectives, Detailed Objectives, and Test Items for each Part of the ACER and University of Melbourne Music Evaluation Kit

Part of kit	Instructional objectives	Detailed objectives	Items (by number) measuring the objectives
I Pitch discrimination	To recognize differences in pitch (1.11)	1.1 To determine whether the pitch of a sound stays the same, or whether it changes	1, 2, 3
		1.2 To determine whether the pitch of a sound becomes higher, or lower, or stays the same	4, 6
		1.3 To determine whether the pitch of a group of sounds becomes higher, or lower, or stays the same	5, 7
		1.4 To relate pitch change to the length of a sound	8, 9
		1.5 To determine which one of a group of sounds is the lowest or highest in pitch	10, 11, 12, 13, 14
		1.6 To recognize pitch movement of one or more sounds by referring to a visual representation of the movement	15, 16, 17, 18, 19, 20
II Discrimination in the length of sounds	To recognize differences in the length of sounds (1.12)	2.1 To identify which one of a group of sounds lasts the longest	1, 2, 3, 4, 5
		2.2 To be able to distinguish the different lengths of sounds played in a group and to relate these differences to a visual representation	6, 7, 8, 9, 10
		2.3 To count the number of beats in a sound	11, 12
		2.4 To distinguish the different lengths of sounds played in a group, by counting beats	13, 14, 15, 16
		2.5 To remember the beat and relate it to a group of sounds	17, 18, 19, 20

Part of kit	Instructional objectives	Detailed objectives	Items (by number) measuring the objectives
III Volume Discrimination	To recognize differences in dynamics (1.14)	3.1 To determine whether two sounds have the same volume or different volume	1
		3.2 To determine whether the volume of a sound stays the same, or whether it changes	2
		3.3 To determine whether the volume of a sound becomes louder, or softer, or stays the same	3, 4
		3.4 To determine whether the volume of a group of sounds becomes louder, or softer, or stays the same	5
		3.5 To determine which one of a group of sounds is the loudest or softest	6, 7, 8
		3.6 To recognize volume differences of a group of sounds by referring to a visual representation of each of the sounds	9, 10, 11
		3.7 To recognize volume changes in a short piece of music by referring to a visual representation of the changes	12, 13, 15
		3.8 To recognize the volume changes of a sound by referring to a visual representation of the sound	14
		3.9 To recognize volume changes where two instruments play simultaneously at different dynamic levels	16, 17
		3.10 To relate volume change to the length of a sound or group of sounds	18, 19, 20

Part of kit	Instructional objectives	Detailed objectives	Items (by number) measuring the objectives
IV Tone colour discrimination	To recognize differences in timbre and texture (1.16)	4.1 To describe how given sounds have been made	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
		4.2 After being acquainted with the qualities of the sound of a given instrument or voice, to distinguish whether a short piece is played/sung by the same instrument/voice	11, 12, 13, 14, 15, 16, 17, 18, 19, 20
V Patterns recognition	To recognize differences in rhythmic patterns (1.13) To recognize differences in pitch (1.11) To remember a given musical theme/phrase	5.1 To recognize whether two rhythmic patterns are the same, or different	1, 2
		5.2 To recognize whether two melodic patterns are the same, or different	3
		5.3 To remember a given rhythmic pattern and to count how many times it is played in a short example	4, 5, 6, 7, 8
		5.4 To remember a given melodic pattern and to count how many times it is played in a short example	9, 10, 11
		5.5 To remember a given rhythmic pattern and to recognize it when it occurs in a short tune	12, 13, 14
		5.6 To remember a given melodic pattern and to recognize it when it occurs in a short tune	15, 16, 17, 18, 19, 20

Part of kit	Instructional objectives	Detailed objectives	Items (by number) measuring the objectives
VI Identification of instruments and instrumental groups	To identify musical instruments from their sounds To recognize differences in timbre and texture (1.16)	6.1 To recognize whether a short piece of music is played by orchestra, string quartet, brass band, or pop group	1, 2, 3, 4, 5
		6.2 To recognize whether a short piece of music is played by string, brass, woodwind, or percussion instruments	6, 7, 8, 9
		6.3 To identify the instrument playing a short solo piece of music	10, 11, 12, 13, 14, 15, 16
		6.4 To identify one of several instruments playing a short piece of music	17, 18
		6.5 To recognize differences between closely related instruments	19, 20
VII Knowledge of musical signs and symbols	To understand the meaning of a written musical symbol (2.21) To translate a written musical symbol and hear the appropriate sound (2.23)	7.1 To identify the correctly notated version of a rhythmic pattern that is played	1, 2, 3
		7.2 To identify the correctly notated version (pitch only) of a melodic pattern that is played	4, 5, 6, 7, 8
		7.3 To relate crescendo/decrescendo signs to a piece of music that is played	9, 10, 11
		7.4 To recognize which playing of a piece of music corresponds to a given set of dynamic markings	12, 13, 14, 15
		7.5 To recognize which playing of a piece of music corresponds to a given set of slur and staccato markings	16, 17, 18
		7.6 Given a written bass part, to recognize when that part is played in a piece of music	19, 20

was done in the university studios. There were two trial-testing sessions; the first was conducted in a sample of secondary schools - state high and technical, Catholic and Independent - with Year 7 students in March and April 1976. The second session was held in a sample of primary schools with Year 6 students in October 1976. After each trial-testing session some items were modified, and those items that proved to be extremely difficult were abandoned. A number of students and teachers involved in the trial testing offered constructive suggestions for improving the materials. An item analysis (see section 6) was carried out after each trial testing session. Criteria used for selecting items for the final forms of the kit were: (1) evidence that an item was measuring a skill or skills associated with the defined domains of tasks (based on information from trial testing, and expert opinion); (2) the difficulty of an item (from item analysis); (3) the balance of items for each part of the kit (for example with Pitch Discrimination it would be undesirable if all the examples 'became higher'). A considerable amount of work went into the recording of the final forms which involved a number of instrumentalists and singers. Even with professional players, it was rare for an item to be satisfactory on first recording. For example a note to be held at constant pitch on a wind instrument might sharpen a minute amount when sustained. Students with discerning ears would mark this example as having changed pitch when the intention was to have a constant pitch. Such errors had to be avoided. Great patience was required by the players particularly in the accomplishment of feats such as starting an oscillator and 'cello exactly together.

DISCUSSION OF TECHNICAL DATA

> All statisical procedures for use with criterion-referenced tests are in an exploratory stage. Much remains to be done, in both theoretical and empirical tryouts, before the most effective methodology for different testing situations can be formulated. (Anastasi, 1976:133)

The quotation from Anastasi is integral to the discussion of technical data associated with the MEK. Conventional item analysis of the kind usually applied to norm-referenced tests has been carried out. This provides information of the customary nature, relating to item facility and discrimination, and to test reliability.

Item Facility and Discrimination

The tables in Appendix VII report the percentage of students answering each item correctly and, for each option, the point-biserial correlation between the option score (0 to 1) and the test score (after subtracting the item score).

These figures are useful for criterion-referenced tests as well as for norm-referenced tests, as Popham (1973:32) points out:

> A positively-discriminating item is just as respectable in a criterion-referenced test as it is in a norm-referenced test, but is certainly not more so ... Discrimination indices are little more than warning flags; common sense must still be used in weighing the worth of an item identified as a negative discriminator (answered correctly by those who scored low on the total test: answered incorrectly by those who scored high on the test).

More general characteristics of a criterion-referenced test may not, however, be acceptable in a norm-referenced test. For example, to assist in producing student scores spread out over a large range, it is customary for a norm-referenced test to include many items with facilities near 50 per cent. A criterion-referenced test is not intended to produce such a spread of scores, but rather to produce scores which indicate the level at which the students are achieving with respect to the test criterion. As a consequence, criterion-referenced tests may include many very easy items, perhaps some which all students in a group may answer correctly, and there may be items also which very few students will answer correctly. This is the case for items in the MEK; such items would be less acceptable in a test which was exclusively norm-referenced. It is also the case that, although most of the items included in the MEK meet norm-referenced requirements with respect to discrimination (point-biserial correlation), some items correlate less strongly with the test score than would be regarded as satisfactory for norm-referenced tests.

Reliability

With norm-referenced measurement, the reliability of a test is calculated to estimate the confidence with which one can assume that a student would be placed at the same position on a continuum (e.g. ranking of a class) if the same test were administered on another occasion. This is the information given by the coefficients, reported in Appendix VII, computed using the Kuder-Richardson formula 20. The KR 20 gives an indication of interitem consistency by using the following formula:

$$\text{reliability coefficient} = \left(\frac{n}{n-1}\right) \frac{\sigma_t^2 - \Sigma\, pq}{\sigma_t^2}$$

where n is the number of items in the test

σ_t is the standard deviation of total scores on the test

p is the proportion of persons who get each particular item right

q is the proportion of persons who get each particular item wrong.

(The product pq is computed for each item, and the products summed over all items.)

Perfect interitem consistency would result in a coefficient of 1.00. Coefficients of 0.8 are usually considered to be very good.

There are two main reasons for the coefficients of the parts of the MEK not being as high as this, both related to the fact that they are intended as criterion-referenced measures. Firstly it can be seen from the above formula that a measure of the variance or spread of scores is included in the formula. A larger value of the reliability is associated with a larger variance, and vice versa. As has been indicated in section 3, criterion-referenced tests are not designed to achieve a high variance (with which is associated a high reliability as measured by KR 20). Differences in item difficulty also reduce the KR 20 estimate of reliability (as may be seen from the numerator of the formula). One might make a minor adjustment to the Kuder-Richardson formula 20 to allow for the variation in item facility, as proposed by Horst (1953) but this modification does not greatly increase the magnitude of the reliability estimate and is not widely used.

Secondly a high reliability coefficient is dependent upon a homogeneous test. As Haladyna (1974) points out, within a criterion-referenced test not all items measuring the attainment of general objectives are necessarily related. It is also useful to recall the distinction made by Harris (1974) between conceptual homogeneity and response homogeneity; a criterion-referenced test will have been constructed on the basis of conceptual homogeneity, while the KR 20 estimate of reliability is dependent upon response homogeneity. This is further discussed below.

In general, criterion-referenced measurement is not especially interested in the placing of students in a continuum. The main concern is whether or not a student's score gives a true indication of her or his performance level. In the case of the MEK, for example, the teacher wants to know whether a student's score on a particular part reflects true mastery of the particular content domain. Is help being given to the students who really need it? Are any students who need help being neglected? Some suggestions have been made as to how estimates of reliability could be computed to satisfy these concerns, although authorities on criterion-referenced test theory (such as Hambledon and Novick, 1973) do not yet have confidence in these procedures. One practical procedure would be to check decisions with students' performance at the next instructional level. In the case of the MEK, teachers would watch out for instances of students working in Group 3 in a particular area (see section 4) but indicating a lack of understanding of basic concepts or skills.

Validity

Content validity is essential to criterion-referenced measurement: the test items must be measuring the specified content area. Cox (1971:74) sums up this point:

> ... these validity estimates must be determined by the purpose for which the test is being used ... In general ... criterion-referencing itself suggests that validity must depend upon the correspondence of the test items with the objectives to which the test is referenced.

This suggests that the validity of the MEK may be ascertained by inspection of the tables indicating the relationship between instructional objectives and test items (Cox, 1971:39-42). Hambledon and Novick (1973: 168) consider that the content validity of criterion-referenced measurement follows if test items are generated from clearly defined content domains; however, they stress the fact that very little research has been carried out in this area. A further step towards indicating the validity of the MEK involved questioning users as to whether the items in each part were related to their intended Year 7 music programs (see section 8).

Test Homogeneity

In the construction of criterion-referenced tests the physical structure of the items is of considerable importance, with writers such as Hively (1974) suggesting the necessity of standard 'item forms'. Such rigidity may assist in the attainment of item homogeneity (which is desirable within a criterion-referenced test), but it guarantees neither conceptual nor response homogeneity (Harris, 1974).

A 'perfect' criterion-referenced test would embody both conceptual and response homogeneity, but within tests such as the parts of the MEK it is possible to identify subsections which at least appear to meet these conditions. Three illustrative examples are discussed.

MEK Part VI, Items 1-5

These five items require students to identify which one out of a brass band, an orchestra, a pop group, and a string quartet is playing a particular piece of music. The items all have the same format, with music and performers being changed. Items 3 and 4 are so easy (99 per cent and 98 per cent facilities respectively) that their interitem correlations are not very meaningful; but the overall picture presented in the interitem correlation table below (phi coefficients are reported) does not encourage one to argue that these items possess much 'response homogeneity'.

Item no.	1	2	3	4
2	0.59			
3	0.02[a]	0.02		
4	0.05	0.05	0.01	
5	0.06	0.07	0.09	0.04

[a] Negative values are underlined.

The correlation between items 1 and 2 is statistically significant, but overall it is not justified to assert that these items, no matter how similar in appearance, are homogeneous.

MEK Part VI, Items 6-9

These four items require students to identify which out of the following families of instruments - string, brass, woodwind, percussion - is playing a particular piece of music. As for items 1-5, all have the same format.

In comparing this group of items with the previous group one first notes that these items are

(a) generally more difficult, and
(b) generally more highly correlating with the test score.

This suggests that these four items are more nearly representative of the test as a whole than are the first five items.

Furthermore the interitem correlation matrix presents a very different picture.

Item no.	6	7	8
7	0.40		
8	0.26	0.002	
9	0.33	0.25	0.17

Items 7 and 8 do not have a statistically significant intercorrelation (although their point-biserial correlations with test score are statistically significant) but certainly there is evidence here of response homogeneity, and the item structure suggests conceptual homogeneity. These four items appear to be a satisfactory homogeneous sub-test meeting the requirements of a criterion-referenced test.

MEK Part VII, Items 4-8

These five items require students to identify which one of three musical examples is played. Instruments used are (respectively) piano, trumpet, bassoon, violin, trumpet.

With the exception of one item 6 the item statistics are satisfactory from a norm-referenced viewpoint. The interitem correlations are shown in the following table:

Item no.	4	5	6	7
5	0.16			
6	0.12	0.06		
7	0.21	0.27	0.24	
8	0.08	0.05	0.05	0.18

While this interrelationship is weaker than for MEK VI, Items 6-9, it is also much stronger than for MEK VI, Items 1-5. There is substantial response homogeneity and once again the item structure suggests conceptual homogeneity.

In this case, however, a closer examination of the exceptional item (6) enables this conceptual homogeneity to be identified with more precision, and heterogeneity to be noted.

Items 4, 7, and 8 require the student to identify the qualitative pattern of pitch changes (i.e., whether a note is at a higher or lower pitch than the previous note) in the music played, and to relate these to the printed notation. For items 5 and 6 the student is required to go through the steps for items 4, 7, and 8 in order to eliminate one distractor. To eliminate the other distractor requires the student to make a judgment about quantitative differences in pitch (in item 5, is the interval between the third and fourth notes a major third or an octave, and in item 6 is the interval between the first and second notes a minor third or an octave?).

In item 5 students are able to make both distinctions easily, and the item fits fairly well with the other items (and with the test as a whole). In item 6 the quantitative distinction is very difficult (presumably because it has to be made before the size of intervals has been established by example, rather than after the size of intervals has been established, as in item 5).

Thus the homogeneity of this group of items is weakened by this additional skill required in two items. (In addition, items 7 and 8 require five and seven notes respectively, where items 4-6 use only four.)

With these three sets of items, the nature of test homogeneity has been explored at a relatively superficial level; the intention has been to warn the test user of the dangers of making too great assumptions about the meaning of test scores on parts of the MEK. The construction of criterion-referenced tests is extremely complex, and even tests as specific as the MEK include a considerable variety of items in each part.

Criterion-referenced tests certainly should be conceptually homogeneous (or composed of easily identifiable parts which have this property), but response homogeneity and a careful analysis of the concepts underlying the test items is also desirable, as is further study of the structure of the parts of the MEK.

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8

EVALUATION

One approach to validating the MEK was to seek opinions of users as to whether the materials were related to curriculum areas to be covered in Year 7, and also to get general information about the usefulness of the MEK. These opinions were sought by means of a questionnaire (see Appendix V) and by a general invitation to users to send comments about the MEK to ACER (see Appendix VI).

Responses to the questionnaire were disappointing. Of 48 users contacted at the beginning of 1977, only 14 had completed the questionnaire by mid-1978 despite follow-up letters. Contact with schools at the beginning of 1979 suggests that it has taken purchasers of the MEK a couple of years to adjust schedules in order to enable tests to be given in first term. An evaluation in 1977, the first year of publication, was apparently too early. It is likely that more useful information could be obtained over the next few years.

General comments on the MEK

The following is a summary of general comments made, with occasional responses from the author given in brackets.

1 Students enjoy doing the tests.

2 The testing is time-consuming.
(Such a judgment is probably dependent upon the value a teacher gains from the students' scores. There does appear to have been a tendency not to relate students' scores to classroom activities, and in such cases, to spend a portion of each of seven music periods in testing seemed excessive.)

3 Duplication by schools (and amount of paper needed) is expensive.
(If copies of answer sheets were sold with the MEK, rather than masters from which copies can be made, the cost of the MEK would be increased by about 60 per cent. The use of cheaper sets of answer sheets - without questions and diagrams on them - would be too confusing for Year 7 students who would have to contend with the sound source, printed questions and diagrams, and finding the right space on the answer sheet. Test scores might well indicate skills other than those intended to be measured.)

4 'With the MEK, kids see that music means business.'
(In schools where music has been viewed as an unimportant frill to the curriculum, the different approach is effective.)

5 'All explanations and instructions are well presented on the tape - almost monotonously so.'
(It was necessary to compromise in setting a pace for each part of the MEK. Instructions were both read aloud and printed to try to help poor readers. Teachers suggested that this practice helped poor readers and students with limited English, but it causes some sections to seem a little tedious to students with no reading problems.)

Specific Information (N = 14)

1 Clarity of recording

Part of kit	Satisfactory	Unsatisfactory	Omit	Comments
I	11	3	0	ghosting a problem
II	9	3	2	male announcer not as clear as female Item 16 poorly recorded
III	9	2	3	ghosting a problem
IV	8	2	4	ghosting a problem Items 19 and 20 poorly recorded
V	7	1	6	
VI	7	1	6	Items 2 and 5 poorly recorded
VII	7	0	7	

Reproducing the tests on multiple copies of cassette tapes inevitably causes some loss of quality. A few particularly poor copies were replaced.

2 Quality of printed copies made from masters

Part of kit	Satisfactory	Unsatisfactory	Omit	Comments
I	13	1	0	
II	12	1	1	
III	11	1	2	
IV	9	1	4	
V	7	1	6	
VI	6	2	6	problems with reproducing photographs of groups
VII	7	0	7	

One school which found the quality unsatisfactory for each part of the kit had used fordigraph heat stencils which were found to be inadequate for the number of copies required. As mentioned earlier, there was some concern about the cost of duplication by schools.

3 Relationship of content to Year 7 music programs

The table below indicates responses to the question: 'Was the content related to what you intend to do in Year 7 music this year?'

Part of kit	Yes	No	Omit	Comments
I	12	1	1	Pitch discrimination is essential to learning to play recorder, and other pitched instruments.
II	11	1	2	
III	11	1	2	
IV	8	2	4	more related to Year 8
V	6	1	7	melodic patterns yes, rhythmic patterns more related to Year 8
VI	7	1	6	more related to Year 8
VII	5	1	8	

As only a small number of respondees had used Parts IV-VII of the kit at the time of completing the questionnaire, it is difficult to draw conclusions from these data about the usefulness of the content. It is probably better to investigate this matter when the MEK has been used in schools over several years. Readers are reminded of the initial investigation of content areas described in Section 5.

4 Difficulty of questions

As two parts of the MEK (VI and VII) relate to acquired musical knowledge, it was thought that some students who had studied little or no music might become distressed when trying to answer these items. In the questionnaire, users were asked, in relation to each part of the MEK: 'Were students troubled by the difficulty of any questions?' Respondees tended to quote numbers of students who got particular questions wrong, and there was no suggestion that students became 'troubled' or distressed because they could not answer the items.

* * *

It is clear that over the next few years further evaluation of the MEK is desirable. In particular, the appropriateness of the seven areas: Pitch, Length of Sounds, Volume, Tone Colour, Patterns, Instruments and Instrumental Groups, and Musical Signs and Symbols should be monitored. With the present potential for change and growth in music education, the needs at the beginning of secondary school may well be different by the mid-1980s from the needs in the mid-1970s. The tests evidently serve a useful purpose, not only as measurement instruments, but as a potential basis for new curriculum developments stemming from student needs. The success of the MEK in this important role will depend upon the resourcefulness and imagination of the teachers who use it.

APPENDIX I

Experimental Teaching Project
Faculty of Music
University of Melbourne

The Experimental Teaching Project, co-ordinated by Max Cooke, officially commenced on 1 July 1974. A General Development Grant provided the necessary finance, assisted later by funds from the Faculty of Music, and the Australian Advisory Committee on Research and Development in Education (later the Education Research and Development Committee) for the work which included the development of the MEK.

The purpose of the project was to investigate different methods of teaching practical music with a view to devising the best possible courses for teacher training within the Faculty of Music.

This work was covered in three main stages:

1 the collection of information about the principal teaching methods that have been developed in different countries and the observation of teaching in Victoria where it was known that innovatory ideas were being introduced;

2 the setting up of classes of children of different ages, talents, and backgrounds to enable experimentation with a variety of teaching methods;

3 the preparation of printed material and video tapes for the presentation of information gained during the investigation and for teacher training courses.

In 1979, financial assistance from the Australia - Japan Foundation will enable detailed investigation of Japanese teaching methods as they are being applied in Australia. This project is likely to develop into a musical neuropsychological study which will aim to construct tests to throw light on the following questions:

1 Does early music training improve the interaction between the two cerebral hemispheres or other parts of the brain?

2 Does a broadly based early music training have any different effect in this regard from that produced by specialized instrumental tuition?

3 Is there an age at which mental processes are already so firmly fixed that no training can have real influence?

APPENDIX II

Music Teaching Objectives for the Experimental Teaching Project

A **Broad Aim**

To develop in students an empathy with music through performance, and through active participation in a variety of musical experiences

B **Goals**

1 To develop in students attitudes that will encourage them to seek involvement in musical activities by
    (a) performing,
    (b) listening to music, and
    (c) creating music

2 To develop in students the skills and understanding needed for musical independence so that students will be able to satisfy their own needs in activities such as self-tuition, sight reading, transposition, wide listening, and original composition

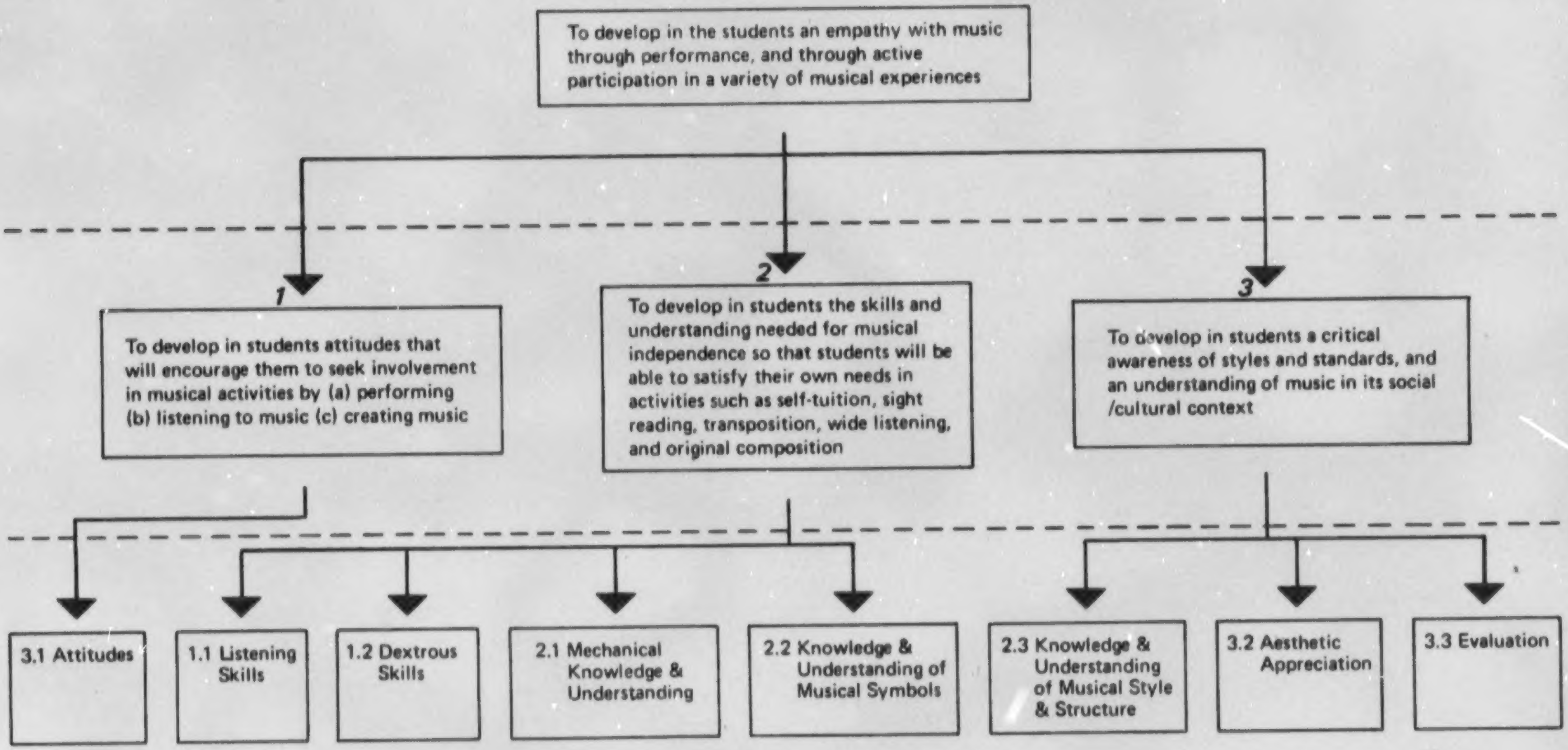
3 To develop in students a critical awareness of styles and standards, and an understanding of music in its social/cultural context.

C **Instructional Objectives**

1.0 Skills

- 1.1 Listening Skills
    - 1.11 To recognize differences in pitch
    - 1.12 To recognize differences in the length of sounds
    - 1.13 To recognize differences in rhythmic patterns
    - 1.14 To recognize differences in dynamics
    - 1.15 To recognize differences in harmonic structures
    - 1.16 To recognize differences in timbre and texture
    - 1.17 To imitate a given musical theme/phrase
    - 1.18 To remember a given musical theme/phrase
    - 1.19 To create sounds to suit a mood or idea
- 1.2 Dextrous Skills
    - 1.21 To perform fundamental movements
    - 1.22 To co-ordinate a number of movements
    - 1.23 To perform movements in response to rhythms

Relationship between the Aim, Goals and Instructional Objectives



To develop in the students an empathy with music through performance, and through active participation in a variety of musical experiences

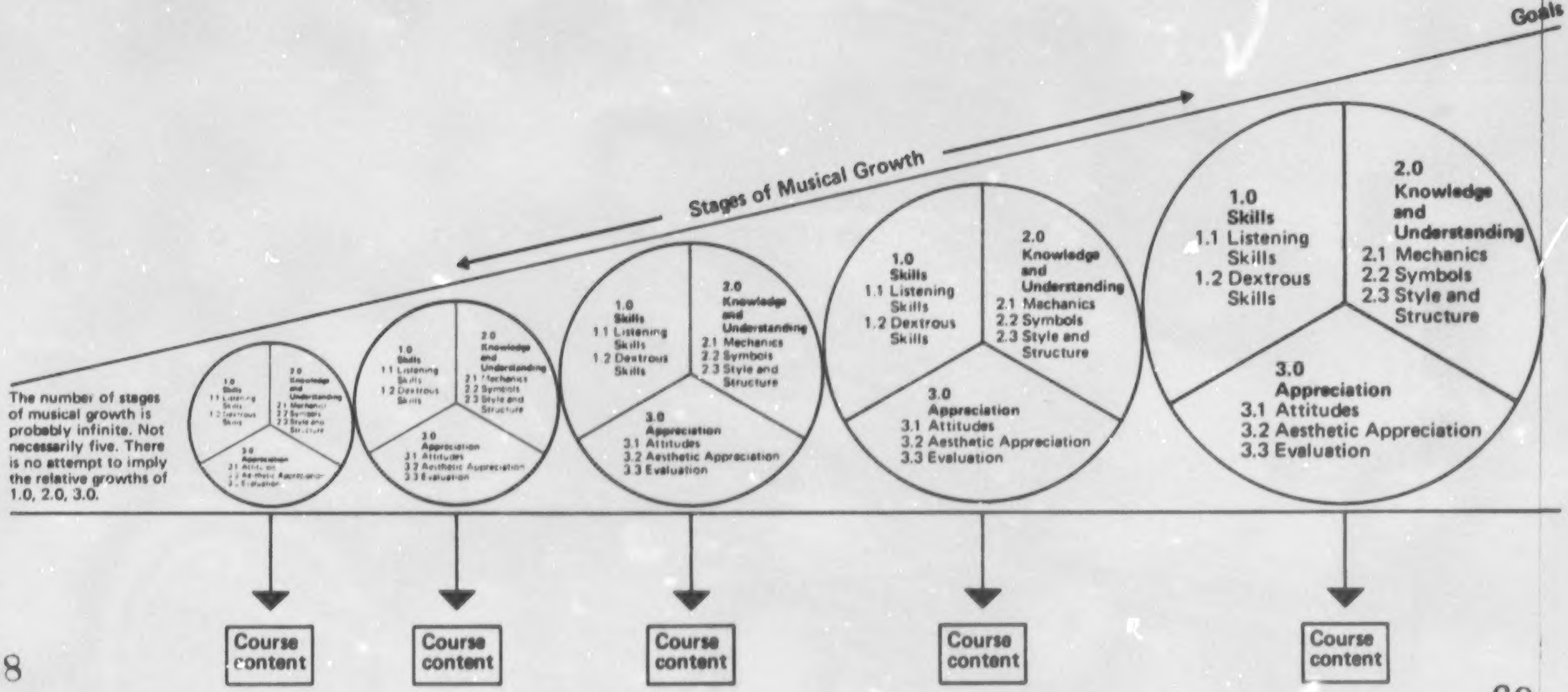
1 To develop in students attitudes that will encourage them to seek involvement in musical activities by (a) performing (b) listening to music (c) creating music

2 To develop in students the skills and understanding needed for musical independence so that students will be able to satisfy their own needs in activities such as self-tuition, sight reading, transposition, wide listening, and original composition

3 To develop in students a critical awareness of styles and standards, and an understanding of music in its social /cultural context

3.1 Attitudes
1.1 Listening Skills
1.2 Dextrous Skills
2.1 Mechanical Knowledge & Understanding
2.2 Knowledge & Understanding of Musical Symbols
2.3 Knowledge & Understanding of Musical Style & Structure
3.2 Aesthetic Appreciation
3.3 Evaluation

Framework for Instructional Objectives of the Experimental Teaching Project



The number of stages of musical growth is probably infinite. Not necessarily five. There is no attempt to imply the relative growths of 1.0, 2.0, 3.0.

1.24 To control and vary the length of sounds
1.25 To control and vary dynamic level
1.26 To control and vary tone colour

2.0 Knowledge and Understanding

2.1 Mechanical Knowledge and Understanding
2.11 To have a basic understanding of how one's particular musical instrument works
2.12 To have a knowledge of the acoustical properties of the particular instrument
2.13 To be able to make minor repairs and adjustments to the particular instrument

2.2 Knowledge and Understanding of Musical Symbols
2.21 To understand the meaning of a written musical symbol
2.22 To translate a written musical symbol and play the appropriate sound
2.23 To translate a written musical symbol and hear the appropriate sound
2.24 To translate a system of written musical symbols to sounds
2.25 To be able to create musical symbols for a particular purpose

2.3 Knowledge and Understanding of Musical Style and Structure
2.31 To have a working knowledge of practical harmony
2.32 To recognize the tonal/atonal basis of music
2.33 To understand the derivation of a key system
2.34 To recognize the role of fragments as a part of a whole composition
2.35 To know the basic structures of musical composition
2.36 To recognize the styles associated with the major periods of musical composition

3.0 Application

3.1 Attitudes
3.11 To want to make music
3.12 To want to listen to music
3.13 To want to create music
3.14 To show satisfaction/enjoyment in taking part in musical activities

3.15 To want to improve one's performance/composition

3.16 To develop self-criticism towards performance/composition

3.17 To be receptive to the music/musical ideas of others

3.2 Aesthetic Appreciation
(a development of Section 2.3)

3.21 To spontaneously seek information about a piece of music

3.22 To interpret music according to its period and style

3.23 To assess the suitability of various tonal, rubato, or other effects in performances

3.3 Evaluation

3.31 To compare performances/interpretations/styles and forms of music

3.32 To have a reasoned preference for a particular interpretation/kind of music

3.33 To be able to evaluate one's own performance

3.34 To be able to offer constructive criticism to fellow performers

3.35 To develop a system of musical values

D Indirect Outcomes of the Teaching Program

It is anticipated that students will become aware of the role of music in the community and that they will be motivated to take part in some of the following activities:

(a) performing as a soloist (instrumentalist, singer, etc.)
(b) performing in a group (orchestra, choir, jazz group, etc.)
(c) performing as an accompanist/repetiteur
(d) conducting and/or composing
(e) making, repairing, maintaining musical instruments
(f) being a sound technician
(g) being a music teacher
(h) being a musicologist (critic, writer, etc.)
(i) being an organizer, manager, stage-hand, etc. for musical activities
(j) using music as a therapy
(k) taking an interest in the music of other cultures
(l) going to concerts
(m) reading about and discussing music and musicians
(n) listening to a variety of recorded music

APPENDIX III

Australian Council for
Educational Research

Experimental Teaching
Project, Faculty of
Music, University of
Melbourne

PROPOSED MUSIC TEST FOR YEAR 7

Name: ______________________________

School: ______________________________

A General

Will you please answer each question by ticking the appropriate box?

1 For how many years have you been teaching year 7/form 1 music? (the years need not be consecutive)

more than 10 years ☐
5 to 10 years ☐
1 to 4 years ☐
less than 1 year ☐
no teaching experience with form 1 music ☐

2 Did you teach year 7/form 1 music during 1975?

yes ☐ no ☐

3 Do you think that some kind of test at the beginning of year 7 is desirable?

yes ☐ no ☐

If your answer is no, please give reasons:

____

____

____

IF YOU ANSWERED 'NO' TO QUESTION 3 THERE IS NO NEED TO COMPLETE THE REST OF THE QUESTIONNAIRE, BUT PLEASE RETURN IT TO ACER IN THE STAMPED ENVELOPE PROVIDED.

4 The following are three possible descriptions of a diagnostic music test for the beginning of year 7.

(1) A diagnostic test of musical skills - innate or acquired. The test would not assume learned musical knowledge (such as reading traditional notation) but would measure skills such as pitch discrimination and ability to recognize differences in the length of sounds. Stimulus material would be provided on tape (or record) and each student would have an answer booklet.

(2) A diagnostic test of musical knowledge and understanding e.g. of symbols such as traditional notation. Stimulus material would be provided on tape (or record) and each student would have an answer booklet.

(3) A diagnostic questionnaire to students asking about previous musical experience (e.g. whether they have ever sung in a choir) and perhaps music in their home background.

Which combination of (1), (2), and (3) above do you think would be most appropriate for a diagnostic music test at the beginning of year 7/form 1?

(1) only ☐
(2) only ☐
(3) only ☐
(1) and (2) ☐
(1) and (3) ☐
(2) and (3) ☐
(1), (2), & (3) ☐
none of the combinations ☐

If you answered 'none of the combinations', could you please describe below the sort of enquiry you would like made at the beginning of secondary school music?

B Specific Content

The following questions refer to your opinion on what you think a year 7/form 1 music teacher needs to know about new pupils at the start of the year.

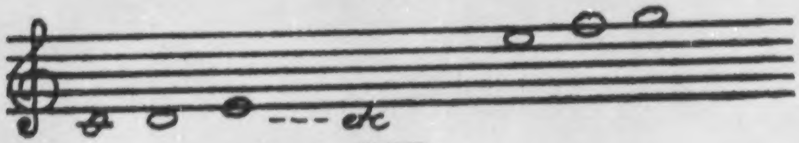
Please indicate your opinion on each question by ticking the box 'important' or 'unimportant'. Space has been left for written comment.

	important	un-important	comments
1 SKILLS (i) Can a student recognize differences in pitch?			
(ii) Can a student recognize differences in the length of sounds?			
(iii) Can a student recognize differences in dynamics?			
(iv) Can a student recognize differences in the timbre of instrumental, vocal, natural, and electronic sounds?			

Please give details of any other skills that you think should be measured:

2 KNOWLEDGE AND UNDERSTANDING

Please tick the box under each musical symbol you think should be tested.



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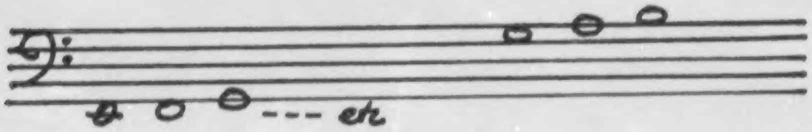

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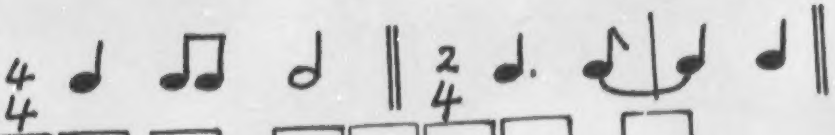
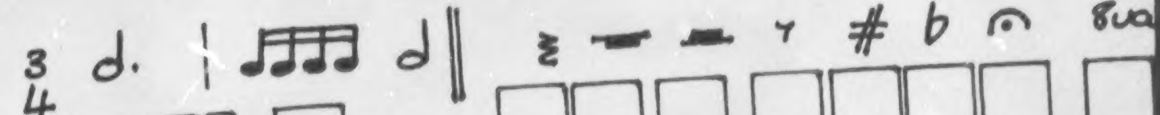


☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

(tie)



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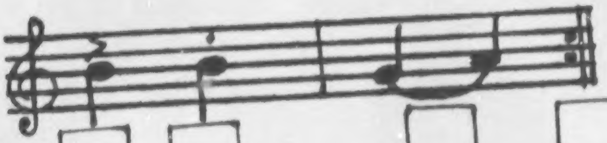
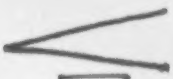


☐ ☐ ☐ ☐

(accent) (staccato) (slur)

ff ☐ f ☐ mf ☐ mp ☐ p ☐ pp ☐



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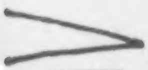


☐

accel ☐ presto ☐ andante ☐ Lento ☐

2 KNOWLEDGE AND UNDERSTANDING (Contd)

Please give details of any other musical symbols that you think should be tested.

Please tick the box next to the structures/structural devices you think should be tested.

recognition of

binary ☐

ternary ☐

rondo ☐

repetition ☐

other (please give details) ______________________

____

Please give details of any other musical knowledge that you think should be measured.

____

____

____

____

____

____

____

3 INFORMATION FOR QUESTIONNAIRE TO STUDENTS

Please indicate your opinion by ticking the box 'important' or 'unimportant.'
Space has been left for written comment.

	important	un-important	comments
(i) Singing experience e.g. Has the student sung in a choir? Has the student ever sung a song in two or more parts?			
(ii) Instrumental experience e.g. Has the student ever played recorder/Orff instruments/other instruments?			
(iii) Singing interests e.g. What kind of songs does the student like to sing?			
(iv) Instrumental interests e.g. If given a large list - with sketches - of a variety of instruments, would the student like to play any of these?			
(v) Student musical preferences e.g. If given a very wide variety of recorded musical excerpts - which ones does the student like?			
(vi) Other musical activities e.g. Has the student ever been to a concert? Has the student ever composed any music?			

Please give details of any other useful information that could be obtained from a questionnaire to students.

Do you have any further suggestions about the content of a diagnostic test for the beginning of year 7/form 1?

Thank you very much for your help.

Could you please return this questionnaire to ACER by FRIDAY 28TH NOVEMBER in the stamped envelope provided?

Jennifer L. Bryce

APPENDIX IV

Lists of Schools

1 Schools involved in specification of objectives and content of Music Evaluation Kit, 1975:

Balwyn High School
Cheltenham High School
Coburg High School
La Trobe High School
Waverley High School
Blackburn Technical School
Caulfield Technical School
Kingsbury Technical School
Knox Technical School
Syndal Technical School
Richmond Girls School
De La Salle College, Malvern
Parade College, Bundoora
Santa Maria College, Northcote
Siena College, Camberwell
Lauriston Girls School, Armadale
Penleigh Ladies College, Moonee Ponds
St Catherine's Girls School, Toorak
Yarra Valley Church of England School, Ringwood
Hamilton High School
Bairnsdale Technical School
Daylesford Technical-High School

2 Schools involved in the first trial-testing session - Year 7 students, March-April 1976:

Balwyn High School
Cheltenham High School
Coburg High School
Waverley High School
Caulfield Technical School
Kingsbury Technical School
Santa Maria College, Northcote
Siena College, Camberwell
Penleigh Ladies College, Moonee Ponds
St Catherine's Girls School, Toorak

3 Schools involved in the second trial-testing session - Year 6 students, October 1976:

Amstel Primary School, Oakleigh East
Ascot Vale Primary School (No. 3585)
Bayview Primary School, Mt Waverley
Brighton Beach Primary School
Brunswick North Primary School
Burnley Primary School

Errol Street Primary School, North Melbourne
Essex Heights Primary School
Fairfield North Primary School
Ivanhoe Primary School
Mt Waverley Primary School
Sunshine North Primary School
Our Lady's School, Ringwood
St Benedict's School, Burwood
St Pius X School, West Heidelberg

4 Schools involved in submitting students' results on the final form of the tests for item analysis*:

Burnie High School, Tasmania
Dimboola High School, Victoria
Canberra Grammar School, Australian Capital Territory
Holroyd High School, Wentworthville, New South Wales
Maroondah High School, Victoria
Knox Technical School, Victoria
Swinburne Technical School, Victoria
White Hills Technical School, Victoria
Catholic Regional College, Noorat, Victoria
St Mary's High School, West Wyalong, New South Wales

5 Comments evaluating the Music Evaluation Kit were received from the following sources:

Ballarat North Technical School (S. Winter)
Braybrook High School (R. Hamilton)
Burnie High School (I. McKay)
Caroline Chisholm High School, Penrith, New South Wales (C. Glendenning)
Catholic Regional College, Noorat (H. Craven)
Clayton Technical School (S. Edge)
De La Salle Boys College, Marrickville, New South Wales (G. Conyngham)
Dickson College, ACT (R.J. Lane)
Dimboola High School (A. Bailey)
Gippsland Institute of Advanced Education (G.T. Smart)
Hamilton High School (A. McGuiness)
Holroyd High School, Wentworthville (P. Morony)
Knox Technical School (E. Taylor)
Lalor High School (M. Lel)
Nursery School Teachers College, Newtown, New South Wales (D. Bridges)
Riversdale High School, Launceston, Tasmania (C. Ryland)
St Joseph's College, Lochinvar, New South Wales (Sr B. Zimmerman)
St Mary's High School, West Wyalong (Sr M.R. Garland)
South Australian Education Department Music Branch (S. Closs)
Swinburne Technical School, Hawthorn (R. Cropley)
Tamworth High School, New South Wales (R. Kane)
Therry College, Broadmeadows (Br P.E. Richardson)
White Hills Technical School, Bendigo (M. Granger)

---

* All schools involved in the preparation of the MEK were in Victoria. Data for the research report came from schools in other States as well as Victoria.

APPENDIX V

QUESTIONNAIRE ON THE ACER AND UNIVERSITY OF MELBOURNE MUSIC EVALUATION KIT

The purpose of this questionnaire is to gain information to be used in a comprehensive handbook on the use of the Kit in the classroom, and to pinpoint aspects of the Kit that could be improved.

Could you please tick the appropriate box, or write comments on the lines provided? It would be helpful if you could be fairly specific particularly regarding unsatisfactory features of the Kit.

1 Comments on each part of the Music Evaluation Kit

(i) Part I Pitch Discrimination

(a) Was the clarity of recording satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(b) Was the quality of your copies from the master printed questions satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(c) Were any of your students troubled by the difficulty of any of the questions?

yes ☐

no ☐

If yes please indicate which questions gave difficulty:

(d) Was the content of Part I related to what you intend to do in Year 7/Form I Music this year?

yes ☐

no ☐

Comments:

(e) Was the content of Part I related to what some of the students had done in primary school?

yes ☐

no ☐

don't know ☐

Comments:

(f) If you have any other comments relating to Part I please make them here:

(ii) Part II Discrimination in the Lengths of Sounds

(a) Was the clarity of recording satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(b) Was the quality of your copies from the master printed questions satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(c) Were any of your students troubled by the difficulty of any of the questions?

yes ☐

no ☐

If yes please indicate which questions gave difficulty:

(d) Was the content of Part II related to what you intend to do in Year 7/Form I Music this year?

yes ☐

no ☐

Comments:

(e) Was the content of Part II related to what some of the students had done in primary school?

yes ☐

no ☐

don't know ☐

Comments:

(f) If you have any other comments relating to Part II please make them here:

(iii) Part III Volume Discrimination

(a) Was the clarity of recording satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(b) Was the quality of your copies from the master printed questions satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(c) Were any of your students troubled by the difficulty of any of the questions?

yes ☐

no ☐

If yes please indicate which questions gave difficulty:

(d) Was the content of Part III related to what you intend to do in Year 7/Form I Music this year?

yes ☐

no ☐

Comments:

(e) Was the content of Part III related to what some of the students had done in primary school?

yes ☐

no ☐

don't know ☐

Comments:

(f) If you have any other comments relating to Part III please make them here:

(iv) Part IV Tone Colour Discrimination

(a) Was the clarity of recording satisfactory or unsatisfactory?

satisfactory ☐
unsatisfactory ☐

If unsatisfactory please give details:

(b) Was the quality of your copies from the master printed questions satisfactory or unsatisfactory?

satisfactory ☐
unsatisfactory ☐

If unsatisfactory please give details:

(c) Were any of your students troubled by the difficulty of any of the questions?

yes ☐
no ☐

If yes please indicate which questions gave difficulty:

(d) Was the content of Part IV related to what you intend to do in Year 7/Form I Music this year?

Yes ☐
No ☐

Comments:

(e) Was the content of Part IV related to what some of the students had done in primary school?

yes ☐

no ☐

don't know ☐

Comments:

(f) If you have any other comments relating to Part IV please make them here:

(v) Part V Patterns Recognition

(a) Was the clarity of recording satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(b) Was the quality of your copies from the master printed questions satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(c) Were any of your students troubled by the difficulty of any of the questions?

yes ☐

no ☐

If yes please indicate which questions gave difficulty:

(d) Was the content of Part V related to what you intend to do in Year 7/Form I Music this year?

yes ☐

no ☐

Comments:

(e) Was the content of Part V related to what some of the students had done in primary school?

yes ☐

no ☐

don't know ☐

Comments:

(f) If you have any other comments relating to Part V please make them here:

(vi) Part VI Identification of Instruments and Instrumental Groups

(a) Was the clarity of recording satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(b) Was the quality of your copies from the master printed questions satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

87

(c) Were any of your students troubled by the difficulty of any of the questions?

yes ☐

no ☐

If yes please indicate which questions gave difficulty:

(d) Was the content of Part VI related to what you intend to do in Year 7/Form I Music this year?

yes ☐

no ☐

Comments:

(e) Was the content of Part VI related to what some of the students had done in primary school?

yes ☐

no ☐

don't know ☐

Comments:

(f) If you have any other comments relating to Part VI please make them here:

(vii) Part VII Knowledge of Musical Signs and Symbols

(a) Was the clarity of recording satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(b) Was the quality of your copies from the master printed questions satisfactory or unsatisfactory?

satisfactory ☐

unsatisfactory ☐

If unsatisfactory please give details:

(c) Were any of your students troubled by the difficulty of any of the questions?

yes ☐

no ☐

If yes please indicate which questions gave difficulty:

(d) Was the content of Part VII related to what you intend to do in Year 7/Form I Music this year?

yes ☐

no ☐

Comments:

(e) Was the content of Part VII related to what some of the students had done in primary school?

yes ☐

no ☐

don't know ☐

Comments:

(f) If you have any other comments relating to Part VII please make them here:

2 Comments on the Teachers Handbook

(a) Were the instructions for administration (pages 10-11) adequate?

yes ☐

no ☐

If inadequate please give details:

(b) Was the explanation on scoring the Kit (page 12 of the Handbook) adequate?

yes ☐

no ☐

If inadequate please give details:

(c) Have you made/will you make use of the sample student record card which may be photocopied from page 5 of the Handbook?

yes ☐

no ☐

Comments:

(d) Have you made/will you make use of the sample class profile which may be photocopied from page 7 of the Handbook?

yes ☐

no ☐

Comments:

(e) Could you please list suggested uses of the Kit other than those mentioned on pages 4 to 9 of the Handbook?

3 Have you attempted to use the Kit with students who have difficulty with English?

yes ☐

no ☐

If yes, could you outline methods you have found useful?

4 Could you please outline what you would consider to be the best use(s) of the Kit?

5 Please make any further comments about the Kit that have not been covered above:

6 Would you be prepared to let Jennifer Bryce have access to students' scores on the test (preferably the completed question sheets) for research purposes? The students' scores would be used

(a) to improve items on the test

(b) in curriculum research - e.g. if a large percentage of students get low scores on Part I perhaps there should be more work on Pitch Discrimination at Primary School level.

The scores of each school would be kept confidential and papers would be returned to the school after use.

Yes, I would be prepared to make students' scores available ☐

No, I would not be prepared to make students' scores available ☐

APPENDIX VI

The Australian Council for Educational Research Limited

EXECUTIVE
S A Rayner MA MEd EdD FACE (President)
A H Webster BA BEc FACE (Vice-President)
Professor R Selby Smith MA AM FACE (Vice-President)
G A Ramsey BSc DipT DipEd PhD MACE
Professor D Spearritt MA MEd EdD

DIRECTOR
J P Keeves BSc DipEd MEd PhD fil dr FACE

PO Box 210 Hawthorn
Victoria Australia 3122
Telephone (03) 818 1271
Cables Aceres Melbourne

Our ref JPK JMR

3 April 1978

We are contacting all users of the ACER and University of Melbourne Music Evaluation Kit prior to its reprinting, as we would be in a position to make minor changes to the tests if there was a firm consensus amongst users that they were necessary. Ms Jennifer Bryce sent a questionnaire evaluating the kit to schools that purchased the materials in 1977. We have noted suggestions made in response to this questionnaire, but to date there has been no strong indication that change is needed.

The authors are aware of some minor imperfections in the presentation, but in consideration of the time and cost involved in re-recording they would prefer to leave the kit in its present form for, say, another two years and then consider a complete review of the content of the tests which by that time may not be meeting adequately the needs of the first year secondary (Year 7) music teacher.

We do however, invite you to suggest changes which you feel are needed at this stage. Could you please send your suggestions to me at ACER by Friday 28 April 1978?

Many thanks for your help and co-operation.

Yours sincerely,

J.P. Keeves
Director

7 Would you be willing for Jennifer Bryce, an author of the Tests to visit your school?

(a) To observe parts of the Kit being used with a class

yes ☐
no ☐

(b) To observe parts of the Kit being used with students who have difficulty with English

yes ☐
no ☐

(c) To discuss/observe follow-up classroom activities related to the content of the Kit

yes ☐
no ☐

8 If you are willing for Jennifer Bryce to visit your school could you please indicate below times of Year 7/Form I Music periods and/or times when it would be convenient for her to visit. (A school visit would be arranged by telephone and confirmed by letter.)

9 Name of School:

Address:

Telephone number:

Person to whom any future correspondence relating to this questionnaire should be addressed:

APPENDIX VII

Technical Data

Facilities (percentages of students getting the item correct) and discrimination indices (point biserial) are given for each item. Levels of significance for the point biserial indices are shown below.

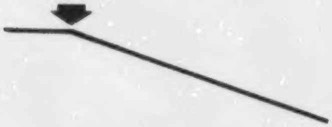
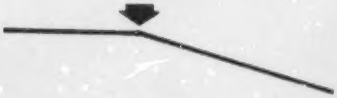
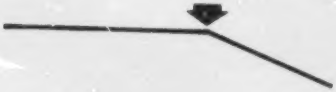
Part of kit	Significant at 0.05 level	Significant at 0.01 level	Number in sample
I	0.11	0.14	329
II	0.17	0.22	138
III	0.12	0.16	264
IV	0.12	0.16	250
V	0.12	0.16	253
VI	0.13	0.18	215
VII	0.16	0.21	151

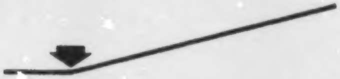
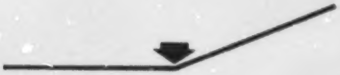
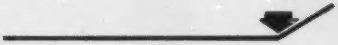
It will be noted that sample sizes vary for each part of the MEK. This is because data were collected by asking users of the MEK to send students' completed answer sheets to the author by a specified date. This proved to be a practical although not an ideal method of gathering data. Schools that contributed data are listed in Appendix IV.

Kuder Richardson reliability coefficients are given for each part of the MEK (KR 20). The keyed correct answer is indicated by *. In two instances, responses are classified as 'omit': (i) if students did not answer an item, and (ii) if students' responses were marked in such a way that it was impossible to determine which answer was intended. This second response form occurred quite frequently in cases of students who overall obtained high scores. This factor may affect the discrimination index in some instances.

Part I, Pitch Discrimination KR 20 = 0.46 N = 329	Facility (Percentages to nearest whole number)	Discrimination	Comments
1 Does the pitch of this sound change, or does it stay the same?			
* change ☐	* option 1 96	0.13	
stay the same ☐	option 2 4	-0.21	
2 Does the pitch of this sound change, or does it stay the same?			
change ☐	option 1 2	-0.13	
* stay the same ☐	* option 2 98	0.07	
3 Does the pitch of this sound change, or does it stay the same?			
* change ☐	* option 1 98	-0.0	
stay the same ☐	option 2 2	0.01	

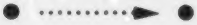
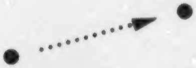
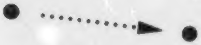
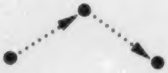
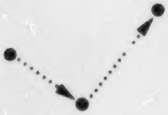
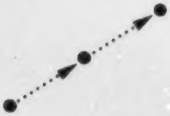
	Facility		Discrimination	Comments
4 Does this sound become higher or lower, or does it stay the same?				
become higher ☐	option 1	4	-0.22	
* become lower ☐	* option 2	95	0.15	
stay the same ☐	option 3	1	-0.32	
5 Do these sounds become higher or lower, or do they stay the same?				
* become higher ☐	* option 1	71	0.20	
become lower ☐	option 2	8	-0.24	
stay the same ☐	option 3	21	-0.37	
6 Does this sound become higher or lower, or does it stay the same?				
become higher ☐	option 1	6	-0.13	Only 24 per cent of students discerned that the whistling sound became lower in pitch. The discrimination index suggests that these students tended to do well on the test as a whole.
* become lower ☐	* option 2	24	0.25	
stay the same ☐	option 3	70	-0.34	

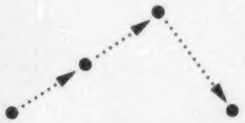
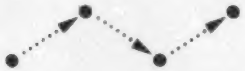
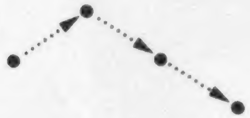
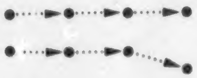
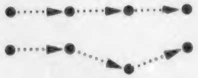
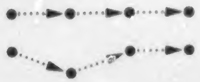
		Facility		Discrimination	Comments
7 Do these sounds become higher or lower, or do they stay the same?					
become higher	☐	option 1	9	-0.29	
become lower	☐	option 2	8	-0.32	
* stay the same	☐	* option 3	83	0.18	
8 Which diagram shows where the pitch of this sound begins to fall?					
	☐	option 1	5	-0.47	
	☐	option 2	20	-0.13	
 *	☐	* option 3	75	0.05	

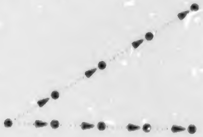
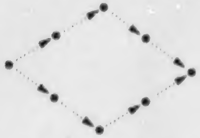
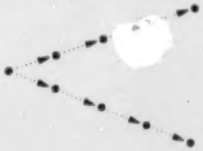
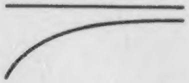
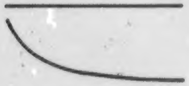
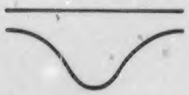
			Facility		Discrimination	Comments
9 Which diagram shows where the pitch of this sound begins to rise?						
		☐	option 1	11	-0.30	
	*	☐	* option 2	84	0.16	
		☐	option 3	5	-0.27	
10 You will hear three sounds. Which one is the lowest - the first, the second, or the third?						
first		☐	option 1	14	-0.32	
second	*	☐	* option 2	74	0.23	
third		☐	option 3	12	-0.38	

			Facility		Discrimination	Comments
11	You will hear four sounds. Which one is the highest - the first, the second, the third, or the fourth?					
	first	☐	option 1	3	-0.26	This was one of the more difficult items - perhaps because it involves remembering four sounds.
	second	☐	option 2	11	-0.02	
	* third	☐	* option 3	41	0.20	The discrimination index indicates that students who got this item correct tended to do well on the test as a whole.
	fourth	☐	option 4	16	-0.28	
			omit	1		
12	You will hear three sounds. Which one is the highest - the first, the second, or the third?					
	* first	☐	* option 1	57	0.12	
	second	☐	option 2	9	-0.32	
	third	☐	option 3	33	-0.22	
			omit	1		

		Facility	Discrimination	Comments
13 You will hear three sounds. Which one is the lowest - the first, the second or the third?				
	* first ☐	* option 1 23	-0.00	This is not a particularly good item in terms of traditional item analysis.
	second ☐	option 2 13	-0.25	
	third ☐	option 3 64	0.00	A number of 'good' students were attracted to option 3, presumably because the third note is lower than the second (but not lower than the first).
14 You will hear four sounds. Which one is the lowest - the first, the second, the third, or the fourth?				
	first ☐	option 1 14	-0.08	
	* second ☐	* option 2 44	0.09	
	third ☐	option 3 25	-0.20	
	fourth ☐	option 4 16	-0.16	
		omit 1		

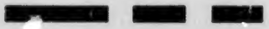
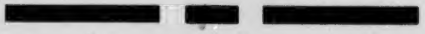
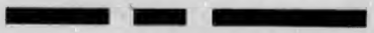
			Facility	Discrimination	Comments
15 Which diagram shows the pitch movement of these two sounds?					
	☐	option 1	30	-0.21	
	* ☐	* option 2	50	0.11	
	☐	option 3	13	-0.21	
		omit	3		
16 Which diagram shows the pitch movement of these three sounds?					
	☐	option 1	16	-0.25	
	☐	option 2	27	-0.20	
	* ☐	option 3	53	0.11	
		omit	4		

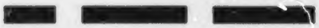
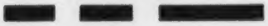
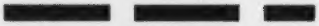
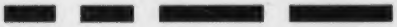
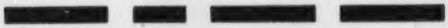
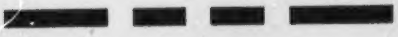
			Facility	Discrimination	Comments
17 Which diagram shows the pitch movement of these four sounds?					
	☐	option 1	28	-0.08	There is close to an even distribution of responses over the three options.
	☐	option 2	33	-0.32	The discrimination index suggests that students who did well on the test as a whole tended to select the correct option for this item.
	* ☐	* option 3	38	0.17	
		omit	1		
18 You will hear two instruments playing. Which diagram shows the pitch movement?					
	☐	option 1	39	-0.19	
	* ☐	* option 2	45	0.12	
	☐	option 3	16	-0.27	

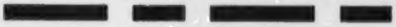
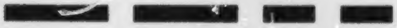
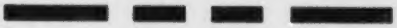
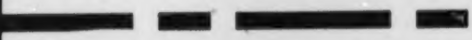
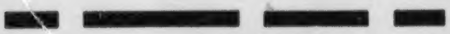
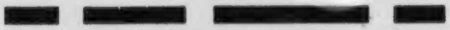
			Facility	Discrimination	Comments
19 You will hear two voices singing. Which diagram shows the pitch movement?					
	☐	option 1	23	-0.04	This proved to be a difficult item. The high percentage attracted to option 2 may suggest that some students gave up and guessed.
	☐	option 2	46	-0.28	However those who did select the correct option were those who tended to do well on the test as a whole.
	* ☐	option 3	29	0.22	
		omit	2		
20 You will hear two sounds. Which diagram shows the pitch movement?					
	☐	option 1	2	-0.12	It was pleasing to see that the last item proved to be easy - suggesting that weaker students did not give up near the end of the test.
	☐	option 2	3	-0.24	
	* ☐	option 3	95	0.11	

Part II, Discrimination in the Length of Sounds KR 20 = 0.67 N = 138	Facility		Discrimination	Comments
1 Here are three sounds. Which one lasts the longest - the first, the second, or the third?				
first ☐	option 1	1	-0.24	
- second ☐	* option 2	97	0.12	
third ☐	option 3	2	-0.14	
2 Which one of these three sounds lasts the longest - the first, the second, or the third?				
* first ☐	* option 1	98	0.01	A very low discrimination, but 98 per cent of students got the item correct.
second ☐	option 2	1	-0.05	
third ☐	option 3	1	-0.07	

		Facility	Discrimination	Comments
3 Which one of these four sounds lasts the longest - the first, the second, the third, or the fourth?				
first ☐	option 1	17	-0.38	
* second ☐	* option 2	75	0.21	
third ☐	option 3	4	-0.25	
fourth ☐	option 4	3	-0.19	
	omit	1		
4 Which one of these four sounds lasts the longest - the first, the second, the third, or the fourth?				
first ☐	option 1	0	0	'first' attracted no students at all. It is justified only by the logic of the item.
second ☐	option 2	1	-0.25	
third ☐	option 3	1	-0.09	
* fourth ☐	* option 4	98	0.14	

		Facility	Discrimination	Comments
5 Which one of these four sounds lasts the longest - the first, the second, the third, or the fourth?				
first ☐	option 1	8	-0.42	This item discriminated very much better than the previous item in terms of facility and correlation.
second ☐	option 2	14	-0.47	
third ☐	option 3	20	-0.16	
* fourth ☐	* option 4	57	0.32	
	omit 1			
6 Which diagram shows the lengths of these three sounds?				
 ☐	option 1	4	-0.22	
 * ☐	option 2	86	0.13	
 ☐	option 3	8	-0.26	
	omit 2			

			Facility		Discrimination	Comments
7 Which diagram shows the lengths of these three sounds?						
	* ☐		* option 1	68	0.29	
	☐		option 2	17	-0.33	
	☐		option 3	15	-0.38	
8 Which diagram shows the lengths of these four sounds?						
	☐		option 1	15	-0.24	
	* ☐		* option 2	73	0.27	
	☐		option 3	12	-0.53	

			Facility	Discrimination	Comments
9 Which diagram shows the lengths of these four sounds?					
	☐	option 1	20	-0.44	
	☐	option 2	22	-0.24	
 *	☐	* option 3	57	0.34	
		omit 1			
10 Which diagram shows the lengths of these four sounds?					
	☐	option 1	11	-0.38	
 *	☐	* option 2	70	0.24	
	☐	option 3	19	-0.27	

			Facility	Discrimination	Comments
11 How many beats are there in this sound?					
	2 ☐	option 1	8	-0.21	Option 3 was a popular choice, but the discrimination index suggests that the weaker students selected it.
	* 3 ☐	* option 2	53	0.25	
	4 ☐	option 3	37	-0.38	
		omit	2		
12 How many beats are there in this sound?					
	* 2 ☐	* option 1	41	0.16	This item has not worked as well as item 11. More students selected option 2 than the correct answer, although the positive discrimination index for option 1 suggests that the respondents were those who tended to do well on the test.
	3 ☐	option 2	45	-0.15	
	4 ☐	option 3	14	-0.30	
13 You will hear two sounds. How long does each sound last?					
	* 2 beats each (2,2) ☐	* option 1	86	0.21	
	4 beats each (4,4) ☐	option 2	11	-0.29	
	6 beats each (6,6) ☐	option 3	3	-0.32	

		Facility	Discrimination	Comments
14 You will hear two sounds. How long does each sound last?				
	2 beats each (2,2) ☐	option 1 10	-0.45	
	* 3 beats each (3,3) ☐	* option 2 81	0.27	
	6 beats each (6,6) ☐	option 3 7	-0.24	
		omit 2		
15 You will hear a group of three sounds. How many beats are there in the sounds?				
	3,2,3 ☐	option 1 25	-0.26	
	* 4,2,3 ☐	* option 2 51	0.23	
	4,3,2 ☐	option 3 23	-0.24	
		omit 1		

		Facility		Discrimination	Comments
16 You will hear a group of three sounds. How many beats are there in the sounds?					
	3,3,3 ☐	option 1	33	-0.30	
	3,2,1 ☐	option 2	20	-0.26	
	* 3,1,3 ☐	* option 3	46	0.28	
		omit	1		
17 The beats will be given, then you will hear three sounds. How many beats are there in each of the sounds?					
	2,1,2 ☐	option 1	33	-0.31	The fairly high positive discrimination index for option 3 indicates that, although responses were spread over all three options, the weaker students selected options 1 and 2.
	1,3,1 ☐	option 2	23	-0.25	
	* 1,2,1 ☐	* option 3	42	0.33	
		omit	2		

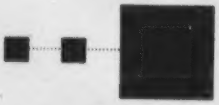
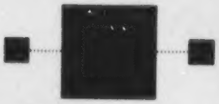
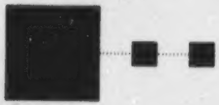
		Facility	Discrimination	Comments
18	The beats will be given, then you will hear three sounds. How many beats are there in each of the sounds?			
	2,1,2 ☐	option 1 22	-0.24	
	3,2,1 ☐	option 2 21	-0.33	
	* 3,1,2 ☐	* option 3 55	0.25	
		omit 2		
19	The beats will be given, then you will hear three sounds. How many beats are there in each of the sounds?			
	2,1,1 ☐	option 1 14	-0.22	
	* 3,1,1 ☐	* option 2 59	0.22	
	3,1,2 ☐	option 3 26	-0.31	
		omit 1		

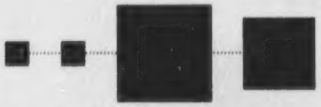
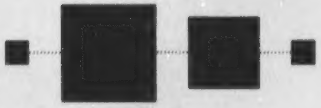
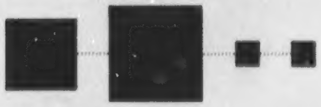
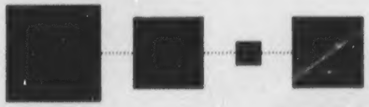
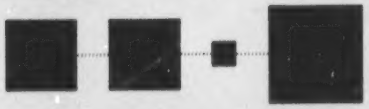
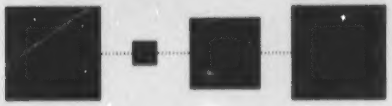
		Facility	Discrimination	Comments
20 How many beats are there in each of the sounds?				
	* 1,2 ☐	* option 1 65	0.26	
	1,3 ☐	option 2 23	-0.28	
	3,3 ☐	option 3 11	-0.41	
		omit 1		

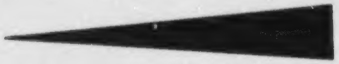
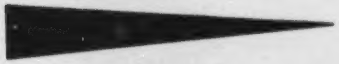
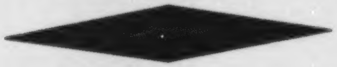
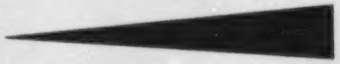
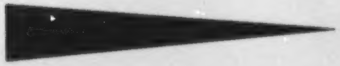
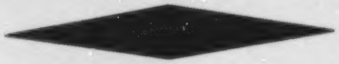
Part III, Volume Discrimination KR 20 = 0.61 N = 264		Facility		Discrimination	Comments
1 Do these two sounds have the same volume, or are they different in volume?					
	* same ☐	* option 1	94	0.20	
	different ☐	option 2	5	-0.30	
		omit	1		
2 Does the volume of this sound change, or does it stay the same?					
	* change ☐	* option 1	97	0.21	
	stay the same ☐	option 2	3	-0.28	
3 Does this sound become louder or softer, or does it stay the same?					
	* louder ☐	* option 1	81	0.17	
	softer ☐	option 2	3	-0.69	
	stay the same ☐	option 3	15	-0.23	
		omit	1		

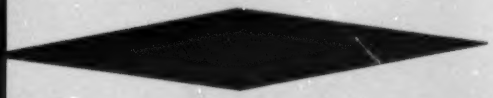
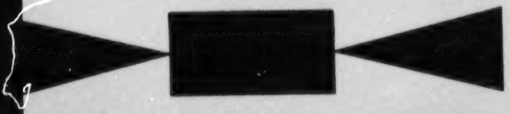
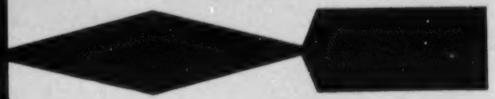
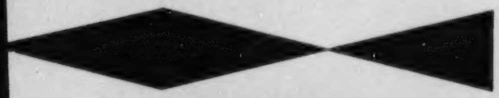
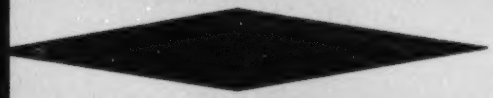
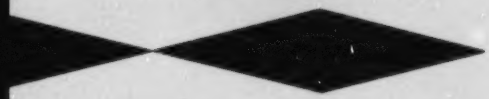
		Facility		Discrimination	Comments
4 Does this sound become louder or softer, or does it stay the same?					
	louder ☐	option 1	4	-0.47	
	* softer ☐	* option 2	91	0.25	
	stay the same ☐	option 3	4	-0.16	
		omit	1		
5 Do these four sounds become louder or softer, or do they stay the same?					
	louder ☐	option 1	2	-0.36	
	* softer ☐	* option 2	97	0.18	
	stay the same ☐	option 3	1	-0.08	

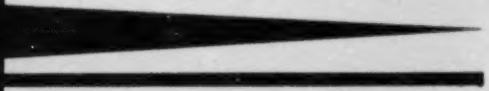
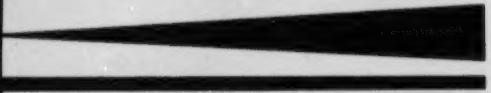
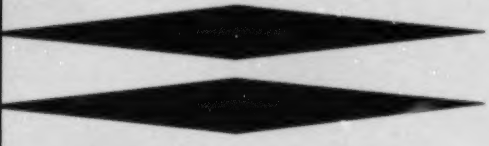
			Facility	Discrimination	Comments
6 Which one of these three sounds is the softest - the first, the second, or the third?					
	* first	☐	* option 1 86	0.07	It is unclear as to why the discrimination for option 1 is so low.
	second	☐	option 2 5	-0.28	
	third	☐	option 3 8	-0.15	
			omit 1		
7 Which one of these four sounds is the softest - the first, the second, the third, or the fourth?					
	first	☐	option 1 3	-0.26	
	* second	☐	* option 2 94	0.21	
	third	☐	option 3 1	-0.21	
	fourth	☐	option 4 2	-0.40	

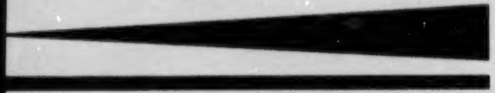
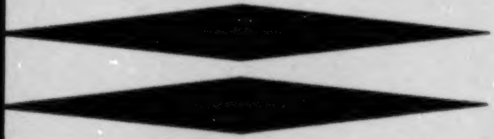
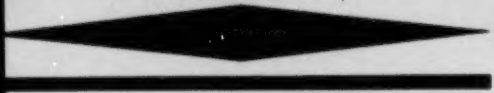
			Facility	Discrimination	Comments
8 Which one of these four sounds is the loudest - the first, the second, the third, or the fourth?					
first	☐	option 1	9	-0.32	
second	☐	option 2	6	-0.41	
* third	☐	* option 3	77	0.14	
fourth	☐	option 4	8	-0.09	
9 Which diagram shows the volume differences of these three sounds?					
	☐	option 1	5	-0.40	
 *	☐	* option 2	92	0.36	
	☐	option 3	2	-0.55	
		omit	1		

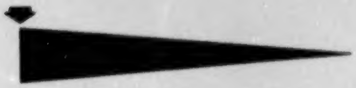
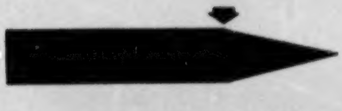
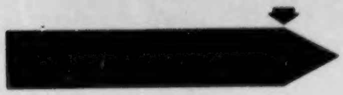
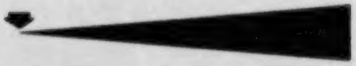
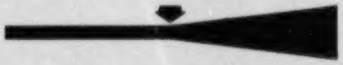
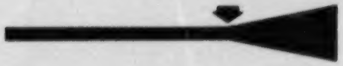
		Facility		Discrimination	Comments
10 Which diagram shows the volume differences of these four sounds?					
	 ☐	option 1	10	-0.18	Option 2 has poor discrimination - this may be related to the fact that 2 per cent of the sample are classified 'omit' for this item.
	 * ☐	* option 2	64	0.08	
	 ☐	option 3	24	-0.22	
		omit	2		
11 Which diagram shows the volume differences of these four sounds?					
	 * ☐	* option 1	79	0.35	
	 ☐	option 2	14	-0.38	
	 ☐	option 3	6	-0.54	
		omit	1		

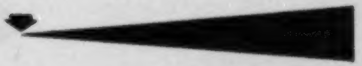
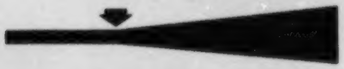
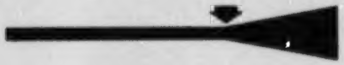
		Facility		Discrimination	Comments
12 Which diagram shows the volume changes of these sounds?					
	* ☐	* option 1	93	0.29	
	☐	option 2	4	-0.27	
	☐	option 3	3	-0.58	
13 Which diagram shows the volume changes of these sounds?					
	* ☐	* option 1	48	0.16	Clearly this item did not work as well as 12 even though item 12 was very easy while about half the students got item 13 wrong. A number of 'good' students were attracted to option 3 which would in fact be a more musical way of playing the example, although option 1 does indicate the actual volume changes.
	☐	option 2	12	-0.62	
	☐	option 3	39	-0.09	

			Facility	Discrimination	Comments
14 Which diagram shows the volume changes of this sound?					
	☐	option 1	9	-0.53	
	☐	option 2	13	-0.27	
	* ☐	* option 3	78	0.27	
15 Which diagram shows the volume changes of these sounds?					
	☐	option 1	17	-0.39	
	☐	option 2	5	-0.62	
	* ☐	* option 3	76	0.34	
		omit	2		

			Facility	Discrimination	Comments
16 Which diagram shows the volume changes of these two sounds made at the same time?					
	☐	option 1	5	-0.43	
	* ☐	* option 2	90	0.35	
	☐	option 3	5	-0.45	

		Facility	Discrimination	Comments
17 Which diagram shows the volume changes made by these two musical instruments played at the same time?				
 ☐	option 1	16	-0.22	
 ☐	option 2	38	-0.23	
 * ☐	* option 3	44	0.13	
	omit	2		

		Facility		Discrimination	Comments
18 Where does the volume of this sound start to become softer?					
	* ☐	* option 1	74	0.16	
	☐	option 2	20	-0.30	
	☐	option 3	6	-0.31	
19 Where does the volume of this sound start to become louder?					
	☐	option 1	6	-0.58	
	* ☐	* option 2	70	0.24	
	☐	option 3	24	-0.29	

		Facility	Discrimination	Comments
20 Where does the volume of these sounds start to become louder?				
 ☐	option 1	7	-0.24	
 ☐	option 2	20	-0.25	
 * ☐	* option 3	72	0.13	
	omit 1			

Part IV, Tone Colour Discrimination KR 20 = 0.48 N = 250		Facility		Discrimination	Comments
For questions 1 to 7, listen to the sounds and decide whether they are made by hitting, plucking, scraping, or blowing.					
1	hitting ☐	option 1	0.4	-0.28	
	plucking ☐	option 2	0.4	-0.18	
	scraping ☐	option 3	0.4	-0.38	
	* blowing ☐	* option 4	98.4	0.22	
		omit 0.4			
2	* hitting ☐	* option 1	97	0.11	Options 3 and 4 were of no use but have been retained in order to keep the item format consistent.
	plucking ☐	option 2	2	-0.17	
	scraping ☐	option 3	0	0	
	blowing ☐	option 4	0	0	
		omit 1			

		Facility		Discrimination	Comments
hitting	☐	option 1	0	0	
plucking	☐	option 2	1	-0.05	
* scraping	☐	* option 3	97	0.05	
blowing	☐	option 4	1	-0.12	
		omit	1		
hitting	☐	option 1	1	-0.28	
* plucking	☐	* option 2	96	0.11	
scraping	☐	option 3	3	-0.13	
blowing	☐	option 4	0	0	
hitting	☐	option 1	34	-0.33	
* plucking	☐	* option 2	60	0.19	
scraping	☐	option 3	5	-0.31	
blowing	☐	option 4	0	0	
		omit	1		

		Facility		Discrimination	Comments
6	* hitting ☐	* option 1	89	0.10	
	plucking ☐	option 2	0	0	
	scraping ☐	option 3	11	-0.21	
	blowing ☐	option 4	0	0	
7	hitting ☐	option 1	1	-0.62	
	plucking ☐	option 2	9	-0.22	
	* scraping ☐	option 3	74	0.14	
	blowing ☐	option 4	16	-0.27	
8	How are these sounds made?				
	plucking and hitting ☐	option 1	4	-0.13	Students may have been confused because the wind instruments are much clearer than the percussion in this example.
	scraping and blowing ☐	option 2	23	-0.22	
	* hitting and blowing ☐	* option 3	72	0.06	
		omit	1		

	Facility		Discrimination	Comments
9 How are these sounds made?				
* plucking and hitting ☐	* option 1	88	0.21	
plucking and blowing ☐	option 2	7	-0.32	
hitting and blowing ☐	option 3	5	-0.30	
10 How are these sounds made?				
plucking and scraping	option 1	4	-0.08	Reasons for the low discrimination for option 2 are not obvious.
* plucking and blowing	* option 2	86	0.06	
scraping and blowing	option 3	10	-0.24	
11 Listen to the sound of a man's voice. The man is a tenor. You will hear a piece of music sung twice. When is it sung by the man's voice - first time, second time, both times, neither time?				
* first time only ☐	* option 1	55	0.06	A number of 'good' students appear to have been attracted to option 4.
second time only ☐	option 2	3	-0.20	
both times ☐	option 3	12	-0.33	
neither time ☐	option 4	30	0.13	

		Facility		Discrimination	Comments
12 Listen to the sound of the flute. You will hear a piece of music played twice. When is it played on a flute - first time, second time, both times, neither time?					
	first time only ☐	option 1	4	0.02	Although a larger percentage of students selected option 3 rather than option 4, the discrimination index indicates that the 'good' students selected the correct answer.
	second time only ☐	option 2	13	-0.17	
	both times ☐	option 3	55	-0.31	
	* neither time ☐	* option 4	27	0.32	
		omit	1		
13 Listen to the sound of an electric guitar. You will hear a piece of music played twice. When is it played on the electric guitar - first time, second time, both times, neither time?					
	first time only ☐	option 1	3	-0.25	The big attraction to option 4 may be because the example played is not a style of music that students would associate with an electric guitar.
	* second time only ☐	* option 2	38	0.12	
	both times ☐	option 3	9	-0.32	
	neither time ☐	option 4	50	-0.15	

			Facility		Discrimination	Comments
14	Listen to the sound of a clarinet. You will hear a piece of music played twice. When is it played on the clarinet - first time, second time, both times, neither time?					
	first time only	☐	option 1	9	-0.17	A high percentage of students (although not the 'good' ones) were unable to perceive a difference between a clarinet and a flute.
	* second time only	☐	* option 2	36	0.25	
	both times	☐	option 3	43	-0.30	
	neither time	☐	option 4	11	-0.15	
			omit	1		
15	Listen to the sound of a trumpet. You will hear a piece of music played twice. When is it played on the trumpet - first time, second time, both times, neither time?					
	first time only	☐	option 1	4	-0.40	
	second time only	☐	option 2	8	-0.11	
	both times	☐	option 3	25	-0.37	
	* neither time	☐	* option 4	62	0.21	
			omit	1		

		Facility	Discrimination	Comments
16 Listen to the sound of a saxophone. You will hear a piece of music played twice. When is it played on the saxophone - first time, second time, both times, neither time?				
	* first time only ☐	* option 1 23	0.12	This item proved to be very difficult. The spread of scores suggests there may have been a fair amount of guessing.
	second time only ☐	option 2 38	-0.13	
	both times ☐	option 3 17	-0.14	
	neither time ☐	option 4 21	0.01	
		omit 1		
17 Listen to the sound of a bassoon. You will hear a piece of music played twice. When is it played on the bassoon - first time, second time, both times, neither time?				
	first time only ☐	option 1 4	-0.17	This item operated in a similar manner to item 14. (For the first playing, the instrument was a French horn.)
	* second time only ☐	* option 2 38	0.16	
	both times ☐	option 3 42	-0.25	
	neither time ☐	option 4 15	-0.13	
		omit 1		

		Facility		Discrimination	Comments
18 Listen to the sound of a trombone. You will hear a piece of music played twice. When is it played on the trombone - first time, second time, both times, neither time?					
	first time only ☐	option 1	10	-0.14	
	second time only ☐	option 2	36	-0.14	
	both times ☐	option 3	7	-0.49	
	* neither time ☐	* option 4	46	0.11	
		omit	1		
19 Listen to the sound of a muted violin. You will hear a piece of music played twice. When is it played on the muted violin - first time, second time, both times, neither time?					
	first time only ☐	option 1	21	-0.08	There is a considerable spread of responses, which suggests guessing; but the discrimination index for option 4 suggests that the 'good' students tended to select the correct answer.
	second time only ☐	option 2	38	-0.00	
	both times ☐	option 3	19	-0.25	
	* neither time ☐	* option 4	20	0.19	
		omit	2		

		Facility		Discrimination	Comments
20	Listen to the sound of a muted trumpet. You will hear a piece of music played twice. When is it played on the muted trumpet - first time, second time, both times, neither time?				
	* first time only ☐	* option 1	44	0.07	
	second time only ☐	option 2	19	-0.11	
	both times ☐	option 3	7	-0.57	
	neither time ☐	option 4	28	-0.04	
		omit 2			

Part V, Patterns Recognition KR 20 = 0.67 N = 253		Facility		Discrimination	Comments
1 Listen to these two rhythmic patterns. Are the patterns the same, or are they different?					
	* same ☐	* option 1	93	0.24	
	different ☐	option 2	6	-0.33	
		omit 1			
2 Are these two rhythmic patterns the same, or are they different?					
	same ☐	option 1	23	-0.47	
	* different ☐	* option 2	76	0.34	
		omit 1			
3 Are these two melodic patterns the same or are they different?					
	same ☐	option 1	16	-0.40	
	* different ☐	* option 2	83	0.32	
		omit 1			

		Facility		Discrimination	Comments
4 Listen to this rhythmic pattern. The pattern is played again. How many times is that pattern played in the next example?					
	four ☐	option 1	2	-0.40	
	five ☐	option 2	6	-0.26	
	* six ☐	* option 3	92	0.23	
5 Listen to this rhythmic pattern. The pattern is played again. How many times is that pattern played in the next example?					
	three ☐	option 1	3	-0.20	
	four ☐	option 2	9	-0.22	
	* five ☐	* option 3	88	0.10	

	Facility	Discrimination	Comments
Listen to this rhythmic pattern. The pattern is played again. How many times is that pattern played in the next example?			
* two ☐	* option 1 96	0.39	
three ☐	option 2 2	-0.65	
four ☐	option 3 1	-0.18	
	omit 1		
Listen to this rhythmic pattern. The pattern is played again. How many times is that pattern played in the next example?			
five ☐	option 1 2	-0.23	
* seven ☐	* option 2 95	0.35	
nine ☐	option 3 3	-0.57	

		Facility		Discrimination	Comments
Listen to this rhythmic pattern. The pattern is played again. How many times is that pattern played in the next example?					
six	☐	option 1	15	-0.35	
* seven	☐	* option 2	73	0.24	
eight	☐	option 3	12	-0.34	
Listen to this melodic pattern. The pattern is played again. How many times is that pattern played in the next example?					
three	☐	option 1	4	-0.36	
* four	☐	* option 2	94	0.19	
five	☐	option 3	2	-0.08	

		Facility		Discrimination	Comments
10 Listen to this melodic pattern. The pattern is played again. How many times is that pattern played in the next example?					
	four ☐	option 1	1	-0.64	
	five ☐	option 2	5	-0.22	
	* six ☐	* option 3	94	0.19	
11 Listen to this melodic pattern. The pattern is played again. How many times is that pattern played in the next example?					
	* two ☐	* option 1	97	0.30	Option 3 is not needed in this item, other than for conformity with the preceding items.
	three ☐	option 2	3	-0.36	
	four ☐	option 3	0	0	

	Facility	Discrimination	Comments
12 Listen to this rhythmic pattern, and try to remember it. The pattern is played again. Now listen to a tune. How many times is that rhythmic pattern played in the tune?			
one ☐	option 1 8	0.03	
two ☐	option 2 21	-0.04	
* three ☐	option 3 47	0.12	
none ☐	option 4 22	-0.38	
13 Listen to this rhythmic pattern, and try to remember it. The pattern is played again. Now listen to a tune. How many times is that rhythmic pattern played in the tune?			
* five ☐	* option 1 21	0.03	This item was clearly too difficult - probably because of the length of the musical example.
seven ☐	option 2 25	0.05	
eleven ☐	option 3 21	-0.23	
none ☐	option 4 31	-0.00	
	omit 2		

	Facility	Discrimination	Comments
Listen to this rhythmic pattern, and try to remember it. The pattern is played again. Now listen to a tune. How many times is that rhythmic pattern played in the tune?			
* two ☐	* option 1 30	0.14	
three ☐	option 2 26	-0.09	
four ☐	option 3 12	-0.46	
none ☐	option 4 32	-0.00	
Listen to this melodic pattern, and try to remember it. The pattern is played again. How many times is that melodic pattern played in the following tune?			
two ☐	option 1 3	-0.56	
* three ☐	* option 2 89	0.38	
four ☐	option 3 6	-0.53	
none ☐	option 4 2	-0.07	

		Facility		Discrimination	Comments
Listen to this melodic pattern, and try to remember it. The pattern is played again. How many times does that melodic pattern occur in the following tune?					
* two	☐	* option 1	73	0.30	
three	☐	option 2	14	-0.30	
four	☐	option 3	5	-0.79	
none	☐	option 4	8	-0.27	
Listen to this melodic pattern, and try to remember it. The pattern is played again. How many times does that melodic pattern occur in the following tune?					
* two	☐	* option 1	86	0.34	
three	☐	option 2	11	-0.31	
four	☐	option 3	2	-0.78	
none	☐	option 4	1	-0.54	

		Facility		Discrimination	Comments
Listen to this melodic pattern, and try to remember it. The pattern is played again. How many times does that melodic pattern occur in the following tune?					
* two	☐	* option 1	83	0.30	
three	☐	option 2	11	-0.31	
four	☐	option 3	5	-0.63	
none	☐	option 4	1	-0.23	
Listen to this melodic pattern, and try to remember it. The pattern is played again. How many times does that melodic pattern occur in the following tune?					
one	☐	option 1	3	-0.64	
* two	☐	* option 2	75	0.32	
four	☐	option 3	21	-0.42	
none	☐	option 4	1	-0.60	

	Facility	Discrimination	Comments
Listen to this melodic pattern, and try to remember it. The pattern is played again. How many times does that melodic pattern occur in the following tune?			
* one ☐	* option 1 27	0.25	
two ☐	option 2 13	-0.08	
three ☐	option 3 45	-0.26	
none ☐	option 4 15	-0.06	

Part VI, Identification of Instruments and Instrumental Groups KR 20 = 0.59 N = 215			Facility	Discrimination	Comments

For each question 1 to 5, there are sketches of four instrumental groups - orchestra, string quartet, brass band, and pop group.

orchestra

string quartet

brass band

pop group

				Facility	Discrimination	Comments
1	orchestra	☐	option 1	11	-0.41	Two options were not needed in this item, but were retained to keep the sequence of items 1-5.
	string quartet	☐	option 2	0	0	
	* brass band	☐	* option 3	89	0.28	
	pop group	☐	option 4	0	0	

orchestra string quartet brass band pop group

				Facility	Discrimination	Comments
2	* orchestra	☐	* option 1	89	0.25	
	string quartet	☐	option 2	6	-0.22	
	brass band	☐	option 3	5	-0.48	
	pop group	☐	option 4	0	0	

orchestra string quartet brass band pop group

				Facility	Discrimination	Comments
3	orchestra	☐	option 1	1	-0.07	Most children can recognize the sound of a pop group!
	string quartet	☐	option 2	0	0	
	brass band	☐	option 3	0	0	
	* pop group	☐	* option 4	99	0.05	

			Facility	Discrimination	Comments

orchestra   string quartet   brass band   pop group

4	orchestra ☐	option 1	1	-0.10	
	* string quartet ☐	* option 2	98	0.02	
	brass band ☐	option 3	1	-0.21	
	pop group ☐	option 4	0	0	

orchestra   string quartet   brass band   pop group

5	orchestra ☐	option 1	26	-0.12	Considering its difficulty, this item did not discriminate very well - perhaps the prominent position of the drums in the pop group picture drew a number of 'good' students to option 4.
	string quartet ☐	option 2	2	-0.17	
	* brass band ☐	* option 3	62	0.06	
	pop group ☐	option 4	10	-0.38	

			Facility	Discrimination	Comments
For questions 6 to 9, listen to the sounds and decide which instruments make the sounds - string, brass, woodwind, or percussion.					
6	string ☐	option 1	0	0	
	brass ☐	option 2	8	-0.31	
	woodwind ☐	option 3	15	-0.48	
	* percussion ☐	* option 4	76	0.31	
		omit 1			
7	string ☐	option 1	8	-0.30	
	brass ☐	option 2	7	-0.23	
	* woodwind ☐	* option 3	77	0.21	
	percussion ☐	option 4	7	-0.39	

			Facility		Discrimination	Comments
8	string	☐	option 1	11	-0.22	
	* brass	☐	* option 2	75	0.23	
	woodwind	☐	option 3	7	-0.34	
	percussion	☐	option 4	6	-0.52	
			omit	1		
9	* string	☐	* option 1	84	0.31	
	brass	☐	option 2	7	-0.43	
	woodwind	☐	option 3	5	-0.39	
	percussion	☐	option 4	4	-0.37	

For questions 10 to 16, listen to the sounds and decide which instrument makes the sound.

10	organ	☐	option 1	4	-0.32	This item has very poor + extremely poor discrimination.
	harpischord	☐	option 2	13	-0.08	
	* guitar	☐	* option 3	83	0.01	

			Facility		Discrimination	Comments
11	violin	☐	option 1	2	-0.48	
	cello	☐	option 2	13	-0.36	
	* double bass	☐	* option 3	84	0.25	
12	trumpet	☐	option 1	35	-0.21	
	* trombone	☐	* option 2	37	0.36	
	French horn	☐	option 3	28	-0.40	
13	guitar	☐	option 1	1	-0.16	Students are clearly familiar with the sound of the banjo.
	* banjo	☐	* option 2	99	0.13	
	harp	☐	option 3	0	0	
14	flute	☐	option 1	20	-0.40	This was known to be a difficult task, but clearly the 'good' students were able to distinguish the sound of the oboe.
	clarinet	☐	option 2	50	-0.06	
	* oboe	☐	* option 3	30	0.20	

			Facility		Discrimination	Comments
15	violin	☐	option 1	60	-0.49	This item clearly distinguished between those students who listened to the whole example and those who made judgment on the first part of the musical example only - 'cello in high register which sounds like a violin.
	* 'cello	☐	* option 2	37	0.32	
	double bass	☐	option 3	3	-0.00	
16	bass drum	☐	option 1	51	-0.33	
	side drum	☐	option 2	10	-0.22	
	* timpani	☐	* option 3	39	0.24	
17	Which one of the following instruments is playing in this piece of music?					
	'cello	☐	option 1	2	-0.08	The distractors for this item were perhaps too different from the correct answer to provide attractive alternatives.
	* piccolo	☐	* option 2	98	0.01	
	piano	☐	option 3	0	0	

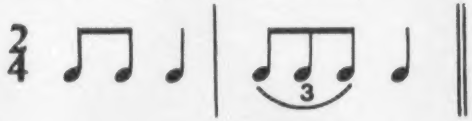
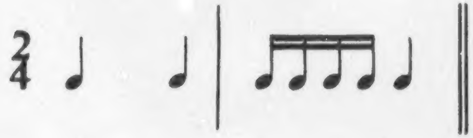
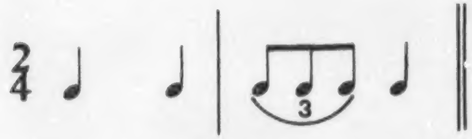
		Facility		Discrimination	Comments
18	Which one of the following instruments is playing in this piece of music?				
	oboe ☐	option 1	16	-0.38	
	trombone ☐	option 2	7	-0.46	
	* cymbal ☐	* option 3	75	0.26	
		omit	2		
19	Which two instruments are making these sounds?				
	a violin, then a viola ☐	option 1	7	-0.26	This item and No.20 have poor discrimination. The reason for this is not apparent.
	* a 'cello, then a violin ☐	* option 2	87	0.02	
	a viola, then a 'cello ☐	option 3	5	-0.01	
		omit	1		

	Facility	Discrimination	Comment
Which two instruments are making these sounds?			
* a trombone, then a trumpet ☐	* option 1 67	0.05	
a trumpet, then a tuba ☐	option 2 24	-0.25	
a tuba, then a trombone ☐	option 3 8	-0.11	
	omit 1		

Part VII, Knowledge of Musical Signs and Symbols
KR 20 = 0.73 N - 151

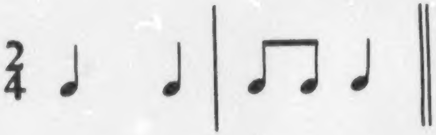
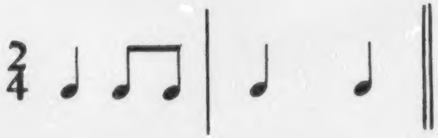
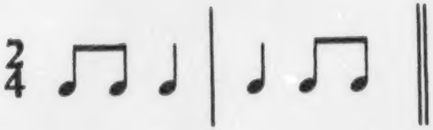
				Facility		Discrimination

1 Look at the written musical examples.

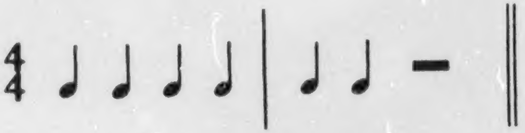
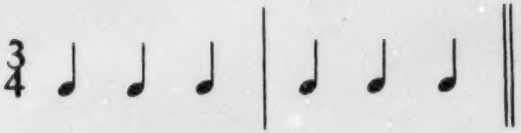
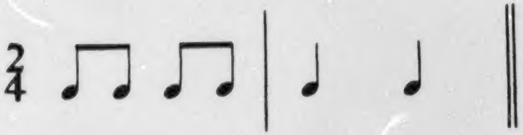
A		☐	option 1	13	-0.51
B		☐	option 2	16	-0.17
C		* ☐	* option 3	71	0.26

Which one is played - A, B, or C?

2 Look at the written musical examples.

					Facility	Discrimination
A			☐	option 1	21	-0.27
B		*	☐	* option 2	74	0.25
C			☐	option 3	5	-0.54

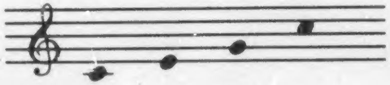
Which one is played - A, B, or C?

				Facility	Discrimination
3 Look at the written musical examples.					
A		☐	option 1	34	-0.36
B		☐	option 2	5	-0.19
C		* ☐	* option 3	60	0.25

Which one is played - A, B, or C?

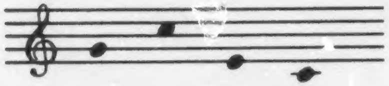
4 Look at the written musical examples.

A



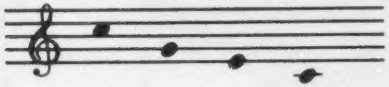
* ☐

B



☐

C



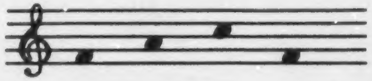
☐

Which one is played - A, B, or C?

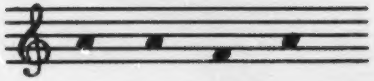
	Facility	Discrimination
* option 1	97	0.14
option 2	1	0.05
option 3	1	-0.27
omit	1	

5 Look at the written musical examples.

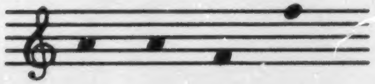
A



B



C



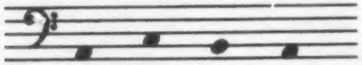
Which one is played - A, B, or C?

		Facility	Discrimination
☐	option 1	7	-0.23
* ☐	* option 2	88	0.18
☐	option 3	5	-0.28

Facility Discrimination

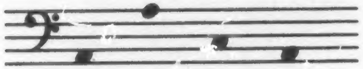
6 Look at the written musical examples.

A



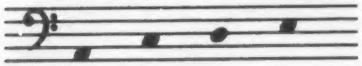
☐ option 1 41 -0.17

B



* ☐ * option 2 53 0.12

C

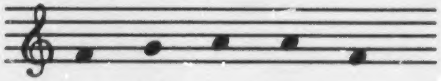
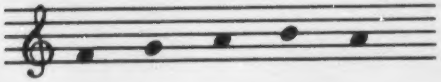
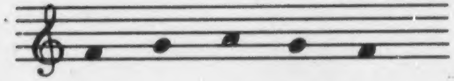


☐ option 3 5 -0.44

omit 1

Which one is played - A, B, or C?

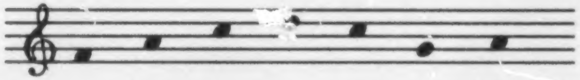
7 Look at the written musical examples.

				Facility	Discrimination
A		☐	option 1	15	-0.41
B		☐	option 2	13	-0.41
C		* ☐	* option 3	72	0.36

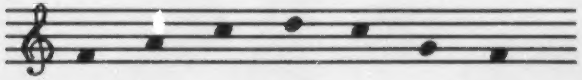
Which one is played - A, B, or C?

8 Look at the written musical examples.

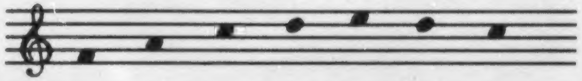
A



B

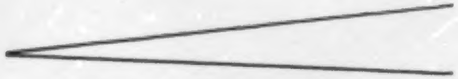
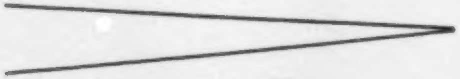
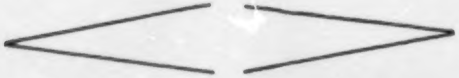
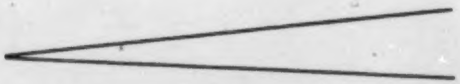
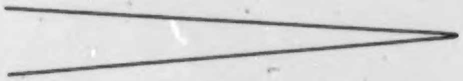
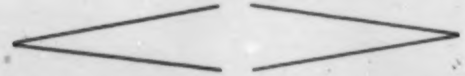


C



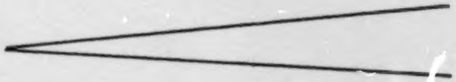
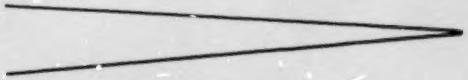
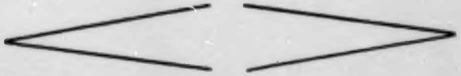
Which one is played - A, B, or C?

		Facility	Discrimination
☐	option 1	24	-0.44
* ☐	* option 2	62	0.31
☐	option 3	14	-0.21

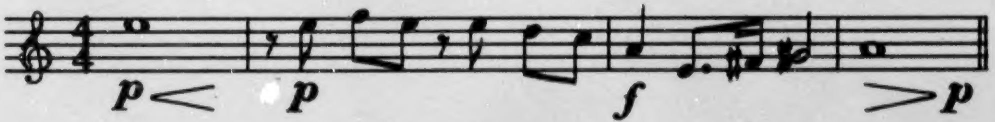
			Facility	Discrimination
9	Look at the musical signs. Which of the following shows the changing volume of this music?			
		☐	option 1	7	-0.35
		☐	option 2	7	-0.29
		* ☐	* option 3	85	0.27
			omit	1	
10	Look at the musical signs. Which of the following shows the changing volume of this music?			
		* ☐	* option 1	81	0.29
		☐	option 2	15	-0.33
		☐	option 3	3	-0.56

Facility Discrimination

11 Look at the musical signs.
Which of the following shows the changing volume of this music?

	* ☐	* option 1	77	0.33
	☐	option 2	18	-0.39
	☐	option 3	5	-0.46

12 Look at the music written below.



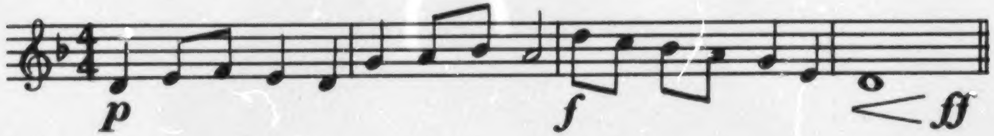
You will hear this music played in three different ways.
Which one correctly follows the volume signs (*p* and *f*) - the first, the second, or the third?

first	☐	option 1	13	-0.14
* second	☐	* option 2	56	0.21
third	☐	option 3	31	-0.33

Facility Discrimination

---

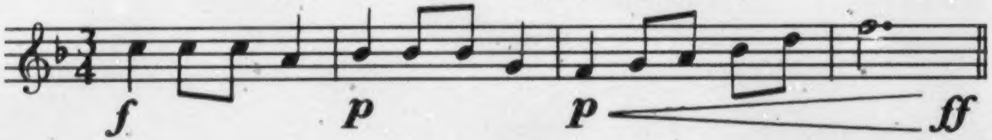
13 Look at the music written below.



You will hear this music played in three different ways. Which one correctly follows the volume signs (*p* and *f*) - the first, the second, or the third?

first	☐	option 1	9	-0.36
* second	☐	* option 2	13	-0.46
third	☐	option 3	78	0.36

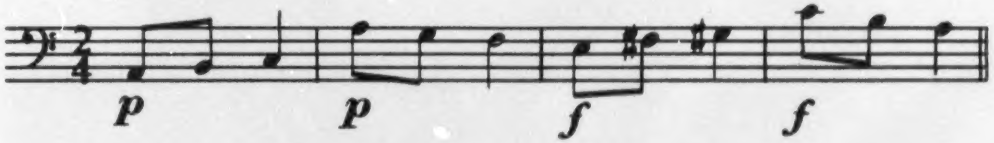
14 Look at the music written below.



You will hear this music played in three different ways. Which one correctly follows the volume signs (*p* and *f*) - the first, the second, or the third?

first	☐	option 1	19	-0.41
second	☐	option 2	25	-0.34
* third	☐	* option 3	56	0.37

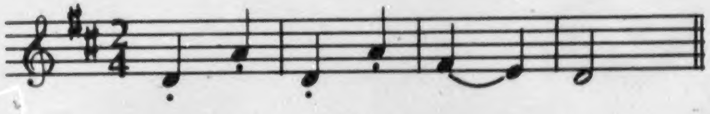
15 Look at the music written below.



You will hear this music played in three different ways.
Which one correctly follows the volume signs (*p* and *f*) - the first, the second, or the third?

			Facility	Discrimination
first	☐	option 1	9	-0.29
* second	☐	* option 2	70	0.37
third	☐	option 3	21	-0.46

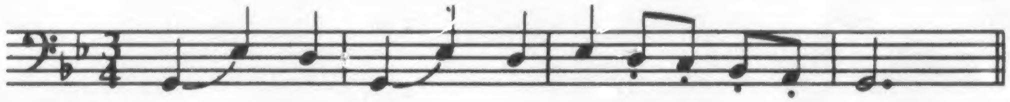
16 Look at the music written below.



You will hear this music played in three different ways.
Which one correctly follows staccato (♩̣ ♩̣) and slur (♩♩ ♩♩) markings - the first, the second, or the third?

* first	☐	* option 1	64	0.38
second	☐	option 2	19	-0.34
third	☐	option 3	16	-0.42
		omit 1		

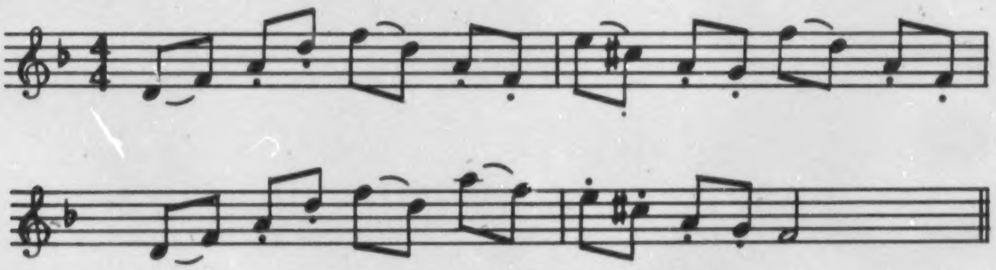
17 Look at the music written below.



You will hear this music played in three different ways. Which one correctly follows staccato (♩ ♩) and slur (♩ ♩ ♩ ♩) markings - the first, the second, or the third?

			Facility	Discrimination
first	☐	option 1	9	-0.44
second	☐	option 2	15	-0.32
* third	☐	* option 3	75	0.33
		omit 1		

18 Look at the music written below.

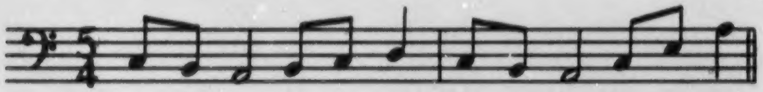


You will hear this music played in three different ways. Which one correctly follows staccato (♩ ♩) and slur (♩♩ ♩♩) markings - the first, the second, or the third?

			Facility	Discrimination
first	☐	option 1	13	-0.32
second	☐	option 2	30	-0.32
* third	☐	* option 3	57	0.28

Facility Discrimination

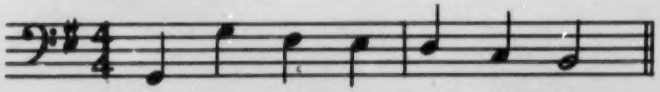
19 Look at the music written below.



You will now hear three different pieces of music.
In one of them, the lower part plays the music written above.
Is this music in the first, the second, or the third piece?

first	☐	option 1	19	-0.20
* second	☐	* option 2	53	0.26
third	☐	option 3	27	-0.34
		omit 1		

20 Look at the music written below.



You will now hear three different pieces of music.
In one of them, the lower instrument plays the music written above.
Is this music in the first, the second, or the third piece?

* first	☐	* option 1	54	0.27
second	☐	option 2	23	-0.19
third	☐	option 3	22	-0.38

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